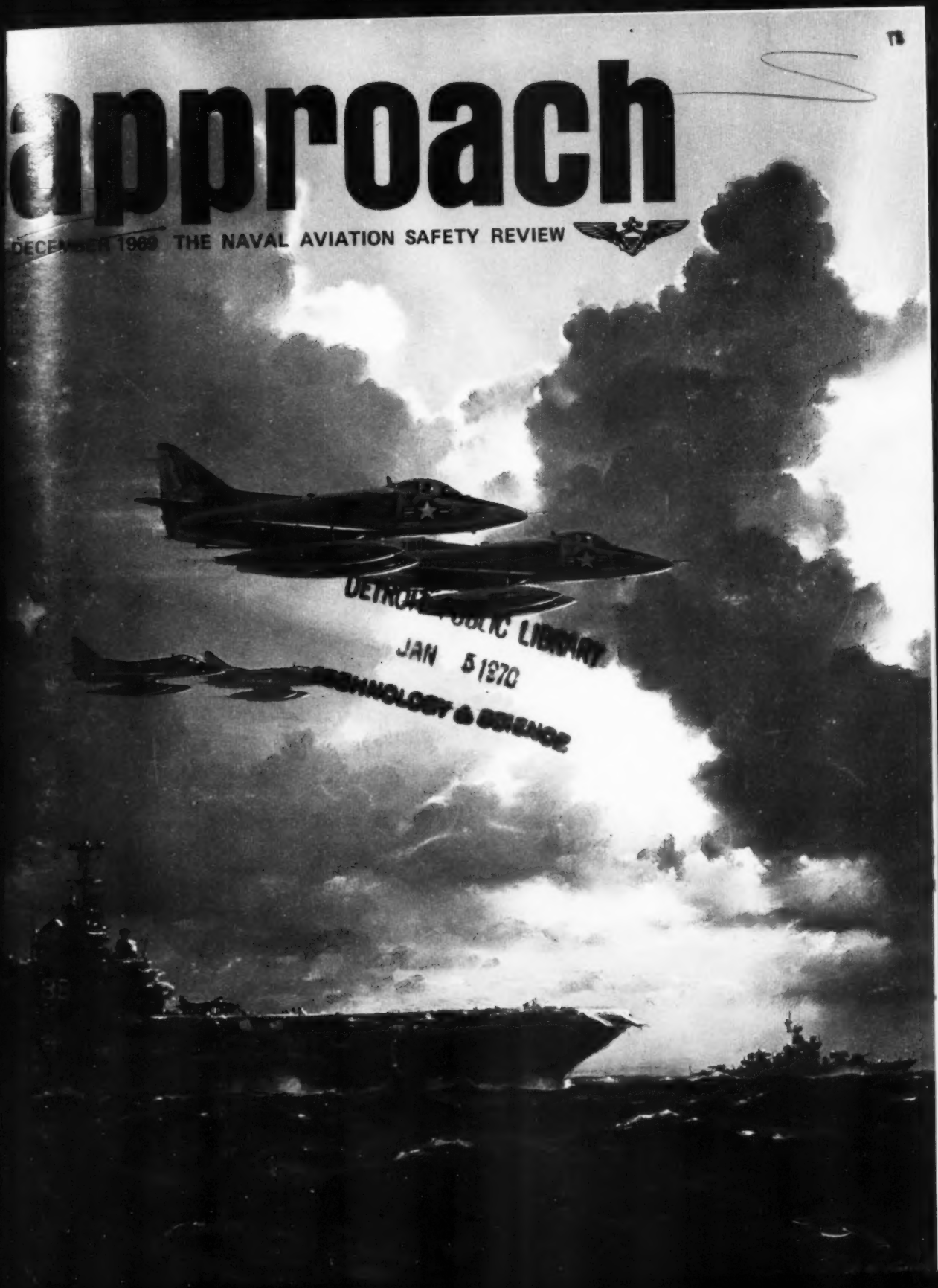
approach

DECEMBER 1969 THE NAVAL AVIATION SAFETY REVIEW



SANTA CLAUS waits in the wings and will soon step forward to occupy the center of the stage. He will be received with varying degrees of credulity by naval aviators but few will be so crass or cynical as to reject him completely. Rather, it is expected that even the few Scrooges among us will ultimately join the True Believers and reap the benefits of a long and joyous holiday leave period.

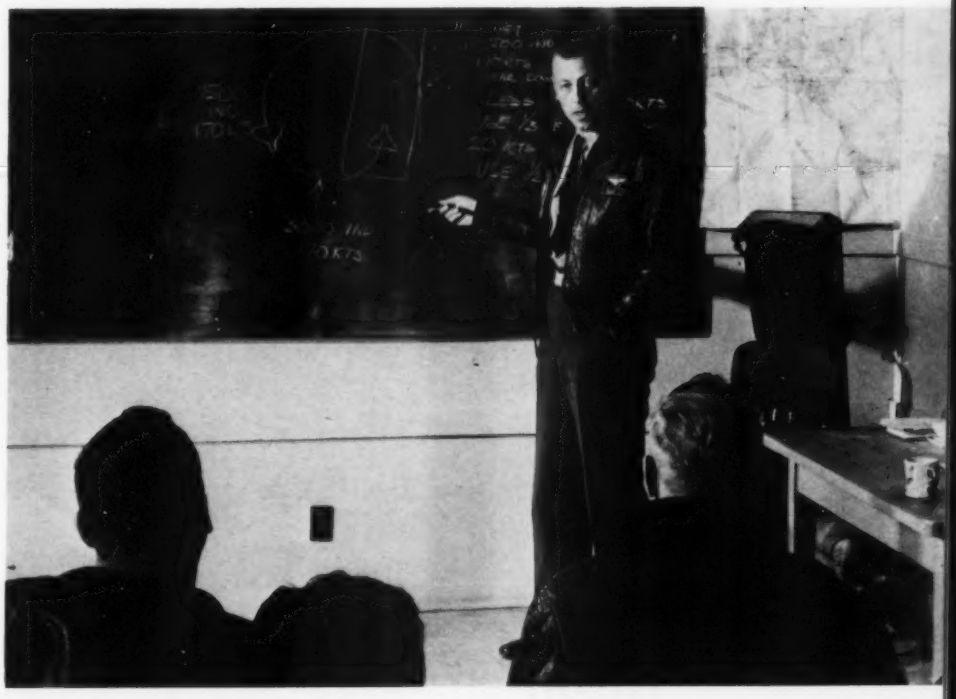
Following the leave period many, if not most, naval aviators will be returning to their squadrons after a considerable period of flying inactivity. This will require a short period of *adjustment* during which visions of sugar plums are erased from their consciousness and replaced with thoughts of checklists, careful preflights and other essential elements of naval aviation flight operations.

What is the best and safest way to make this *adjustment?* There's no one easy answer to this question. Every operating unit has its own unique situation to consider, nevertheless, this annual adjustment deserves our thoughtful consideration. That is why we urge you not to miss this important. . . .

All Officers Meeting

LCDR Ed Becker, the administrative officer, stood behind the podium and studied several penciled notes, looking up from time to time to greet one and then another of the officers as they drifted into the readyroom and took their seats.

The noise level rose steadily as the room filled and fragments of conversations penetrated the general hum to claim Ed's attention. LTJG Ron Smith's voice seemed to carry especially well as he detailed the story of his weekend in the City by the Sea. He was obviously warming to the subject when someone called, "Standby." Ed turned to see the Skipper entering the door and called, "Attention on deck!"



The conversation came to an abrupt halt as the officers rose and stood at attention. The Skipper entered, followed by Commander Johnson, the Exec. The Skipper waved the officers to be seated as he and the Exec took their own seats.

Ed waited for the noise to subside, cleared his throat and began . . . .

"Good morning, gentlemen. I wish we had time to hear how Ron Smith's weekend turned out . . . but duty calls! First on the agenda is holiday leave. The holidays have been divided into two leave periods; 17-28 December and 29 December-4 January. Fifty-five percent of the officers will be allowed on leave at any one time. Everyone should be able to take leave during one or the other periods and, depending on the number of requests, leave will be granted for both periods to as many officers as possible. Department heads are requested to have all departmental leave requests in the Admin Office not later than 5 December. The approved leave schedule will then be published by 10 December. Any questions?

"None? . . . then let's continue. Ops, do you have anything to present this morning?"

Continued

LCDR Jack Stone nodded, stood and made his way to the podium . . . . "In regard to the holiday leave period, the Exec has indicated that some syllabus training flights will continue. For the most part, however, the flying which is done will be standardization/instrument checks, instrument and night proficiency training flights. This being the case, the C.O. has authorized a liberal cross-country policy during this period. It might be well to point out here that the Skipper, the Exec and myself expect that requests will be approved only after it has been determined that the entire flight has been carefully planned. This means that a completed flight log must accompany each request. Don't be content, however, with merely completing the flight log – really spend some time preparing for the flight.

"Another point I want to bring up; I have noticed during recent weeks that pilots on bombing flights to the West Target are entering the field traffic pattern at the end of the flight via Point Option. That is, they are calling the point and getting clearance to enter downwind instead of making a normal entry. Now there is nothing in the Ops Manual to *prohibit* this but it creates a situation for a potential traffic conflict. It's only a potential conflict but it is one which can be avoided by making a normal entry. Save Point Option entries for the low visibility weather, as intended. Entering from Point Option after leaving the West Target may save you five minutes' flight time . . . but are we that hard up for time?

"That's all I have . . . . at least for now."

Ed stood again and called on LCDR Pete Ross, the maintenance officer.

Pete began . . . . "We're still getting yellow sheet writeups which are incomplete – and don't contain enough information to really identify the problem. When this happens, maintenance personnel have to run down the pilot to get the needed information. This takes time and affects our availability since pilots involved are often out flying. On the other hand, if maintenance personnel try to fix the discrepancy without the additional information, they could end up writing it off as 'Ground checks OK.' Without a clear writeup they will be unable to identify the exact discrepancy, let alone fix it.

"The material officer is making up some new flight packets and will give you a brief on their contents at the next All Officers Meeting. These new packets will include servicing information which will be needed by pilots filing for cross-country flights into colder weather areas."

The next speaker was LT Russ Benson, the aviation safety officer.

"Gents, we're going to pass up our usual emergency review session this morning. Instead, I want to suggest that all pilots who expect to be flying during the leave period keep in mind that this period will bring some special demands. Many of the maintenance troops will also be taking leave. Those who remain are going to have a substantial job keeping our aircraft checked, serviced, preflighted and ready to go. I've suggested to ops that assignments of available aircraft during this period be coordinated with maintenance so that ***all*** up aircraft will be flown as often as the schedule permits. This will avoid some of the problems which usually occur when aircraft are allowed to sit on the deck for extended periods.

"There are several other aspects of flight safety during the leave period which I will cover in more detail at the next All Officers Meeting.

"I want to mention, also, that last week we passed the 9000 hour mark for accident-free flying. These hours have been accumulated over a period of 16 months of operations, including one deployment.

"The Skipper has had me looking into ways we can best insure safety of flight during the period after the holidays when we are in the process of resuming full flight operations. I've come up with some recommendations which I have passed on to him, the Exec and the department heads. These recommendations are included in the minutes of the last Aviation Safety Council meeting. Mainly, they involve setting aside a period immediately after the holidays to hold a series of review type lectures before we resume flight ops. This standard $3.98 package would cover these subjects as a minimum:

- Use of safety and survival equipment and related procedures.
- Aircraft preflight, ground handling, hand signals and normal flight procedures.
- Aircraft flight characteristics, operating limitations and emergency procedures.
- Local course rules, flying areas, instrument procedures and SAR.

"In addition, maintenance support personnel should be given a series of short refresher lectures on the operation of ground handling equipment, the preflight of aircraft, aircraft starting and ground handling systems. The session on aircraft servicing will include fuel, oil, hydraulic, pneumatic and oxygen systems.

"At this stage of the game these are only recommendations and some of you may hope that they *remain* recommendations. Even so, I believe you will agree that each one of us will want to be sure that he is current in all procedures, is in good physical condition, has an airworthy aircraft and a complete brief prior to the first flight after the holidays. A more-or-less formal program would provide all hands with the *time, facilities and instruction* necessary to achieve this goal. But, that's neither here nor there. As the Skipper has indicated, he will express his own thoughts this morning about what we can do to maintain flight safety during this period. Captain . . . ."

"Gentlemen, we have quite a lengthy period ahead of us during which our flight operations will be conducted under unusual or demanding circumstances. Cold weather is already here – the leave period begins soon and after that we'll be resuming full flight operations. A short time later we'll be deploying with all our aircraft to Sand Flats for two weeks of weapons work. So as we

He who returneth to flying after the Holidays without reviewing NATOPS asketh for trouble.

Olde Aviation Proverb

blissfully and perhaps complacently look forward to the holidays, we may be underestimating or overlooking some real problems which we will have to cope with.

"I was at the CAG's commanding officers meeting on Friday. Safety goals for the current fiscal year were one major point of discussion. CAG has stated his intense interest in this matter. His feeling is that safety and readiness are synonymous. By way of example he points out that a shortcut which results in an accident or incident is a blow to *'safety,'* but it could also be said just as truthfully that it is a blow to *'readiness'*. If an accident occurs in a unit two days before a scheduled deployment, even a minor one, will the squadron be ready to deploy on schedule with a full mission capability? The answer, of course, is 'No.'

'We are told that, historically, there is a rise in the accident rate during January. The reasons for this are not completely clear. Of course, there are the holidays and the lack of regular flying. Common sense tells us that a layoff such as this introduces problems which have a *potential* to degrade safety and readiness. So we are going to *plan now* to have our Back in the Saddle program established before we scatter to the four points. I don't want our planning to be confined to the obvious, such as – three weeks of flight inactivity or personnel fatigue resulting from extensive travel and social activities . . . although these must be considered. I want the entire range of our operations *and* operational *environment* to be considered. This means close attention to the weather, to say the least.

"I want to emphasize my belief that safety and readiness result from the coordinated efforts of *all hands.* So that's the kind of program I am going to outline this morning – one that encourages, develops and uses the best contribution of *every* man in the squadron. We are talking now in particular about the period which extends from now until the end of January but we must take an approach to safety during this period which will stay with us long after January has come and gone. This is simply to say that it must be a considered, *professional* approach.

"In order to develop a meaningful Back in the Saddle program and execute it in a timely manner, I want - etc - etc - etc."

There is no single Back in the Saddle Program that covers all types of units and activities. Our goal in presenting this "All Officers Meeting" is to stimulate awareness of the potential problems which may be encountered in post-holiday operations – not to prescribe detailed programs. It's up to you to plan your own best way to get

Back in the Saddle

A Page from the ASO's Songbook

God Rest Ye Merry Flying Men

(To be sung to the tune of 'God Rest Ye Merry Gentlemen')

God rest ye merry flying men.
Let not ye go astray –
Your sweat and toil throughout the year
Earns rest on Christmas day.

So party long with wine and song
And smooth your furrowed brows.
But remember you soon will fly again,
Fly again,
Yes, remember you are soon to fly again.

Mix not your work and play, brave men,
They go not well as one –
Close up the hangar doors 'till when
The holiday is done.

Concern yourselves with mistletoe and
Gifts and songs and joy,
But forget not the day will soon come when,
Soon come when, you will find
Yourself back in the saddle then.

Prepare yourself before you leave
For Christmas time at home –
Think some about the things you do
When airborne you must roam –

A brief review of NATOPS helps
To put your mind at ease
For the time when you fly your bird again,
Fly again,
Yes, a brief review will keep your bird a friend.

So when its time to strap it on,
There're jobs that must be done,
Another look at checklists true
Replaces party fun.

You'll find that you return in style
To Helo, Jet, S-2
And you'll fly just as well as done before,
And evermore,
Yes, you're sure to fly as well as done before.

So rest ye well, ye merry men.
Who wear the wings of gold.
Let Christmas fill your hearts with cheer,
As said in songs of old.

May happiness and peace of mind
Find you and all your kin,
And may clear skies be there when you return,
To fly again,
For remember, you are soon to fly again.

AIRCRAFT ACCIDENT INVESTIGATIONS

6

MOST aircraft accidents which leave accessible wreckage and survivors also leave clues or leads that the AAB (Aircraft Accident Board) and other accident investigators use as a point of departure for commencing their investigations. This article deals with a typical ground accident/incident and illustrates the steps which were involved, shows how the investigation ended in a positive determination of the cause and what action was taken to preclude the occurrence of future similar accidents.

The Mishap

Two H-2 helicopters were preparing for flight one morning and were parked on adjacent ramp spots. The first helicopter had been put up for a test hop to check for correct autorotation RPM. The maintenance test pilot briefed his copilot on the purpose of the flight and together they conducted a thorough preflight. Particular attention was devoted to the rotor head, flap-rod adjustments and main rotor blades because the H-2 rotor blades include controllable flaps on each main blade. Both pilots noted that all nuts and cotter pins were in place. The pilot started the engine and engaged the rotors. He then felt a jerk in the cyclic, heard a loud thud and experienced a momentary severe airframe vibration. While he was trying to determine the reason for this unusual series of events – he was looking at his instruments – his attention was called to the plane director who was giving him the cut signal. The pilot secured the engine immediately.

A flap had separated from a rotor blade on the first helicopter and struck the second one, which was manned but which had not yet been started. The first helicopter required replacement of the blade flap assembly and associated mounts, bearings, washers, nuts and cotter pins. The second helicopter incurred considerable damage. The flap had initially hit one of the main rotor blades (necessitating a blade change) and then ricocheted into the airframe around the copilot's compartment causing extensive damage to the structure and shattering the overhead plexiglass. It also struck the copilot and caused a massive contusion of his left shoulder and arm.

Squadron Investigation

The squadron AAB was quickly convened and the investigation began. A thorough search for all of the aircraft debris was conducted and a fractured nut was found some distance from the scene of the mishap. The squadron maintenance department personnel correctly surmised that the nut was one from the blade flap of the first helicopter. The investigating board requested an engineering analysis to determine if the nut which was found actually came from the flap-rod involved in the mishap and, when this proved correct, requested a metallurgical analysis of the nut.

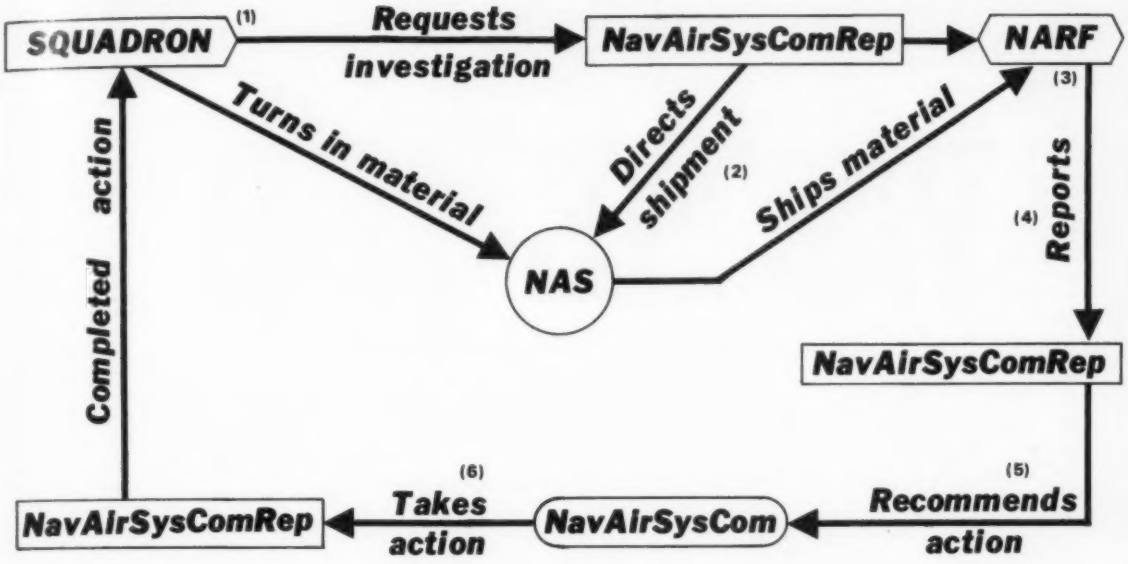


Fig. 1

NARF Engineering Investigation

The engineering investigation program is set forth in NavAir Instruction 4730.5. A typical flow chart of the engineering investigation is depicted in Fig. 1.

In this case (1) the squadron sent a safety UR (unsatisfactory report) on the nut and a priority investigation request to the appropriate NavAirSysComRep (Naval Air Systems Command Representative). (2) The NavAirSysComRep assigned a control number and designated the particular NARF (Naval Air Rework Facility) to do the job. The squadron normally would have turned in the nut to the supporting air station for shipment to the NARF as depicted in the flow chart. In this particular case, however, the nut was hand-carried from the squadron to the NARF in order to expedite the investigation. (3) The NARF assigned an engineer to see if the nut was the one which had failed and if so, why. Concurrent with the investigation of the failed nut the squadron also sent a random sample of other nuts of this type obtained from the ready issue bin. A very interesting fact came to light. Two different kinds of nuts were intermixed and were being used. One kind was prone to cracking and neither kind could meet the required tensile strength test.

It was verified that the suspect nut came from the flap-rod involved in the mishap and that the cotter pin was in place at the time of the failure. A preliminary report was made by the NARF (4) to the NavAirSysComRep (within 10 working days for a safety engineering investigation). The NavAirSysComRep in turn made a recommendation (5) to NavAirSysCom to withdraw both types of nuts from service use. NavAirSysCom, after weighing the facts, concurred in the recommendation and directed (6) ASO (Aviation Supply Office) to purchase the required quantity of new nuts with satisfactory tensile strength and that they be designed with a unique identifying shape which will preclude inadvertent substitution of other types. The helicopter contractor was directed by NavAirSysCom to provide source inspection to assure proper quality control. Quantities of the new type nut were distributed to H-2 squadrons and supporting activities as soon as they became available from the manufacturer. (Time involved from the accident to completed action was less than four months.)

Case Closed.

The safety URs submitted by squadrons help to establish data which indicate failure trends. These data also frequently provide the clues that ultimately bring about solutions to aircraft accident investigations.

Keep those URs coming. – Ed.

HARRY HELO
PRESENTS

WE'RE IFR

A THREE ACT PLAY

TIME: EARLY SPRING

LENGTH: NOT LONG

☆ THE PLAYERS ☆

Oceanographer Aerologist . . LCdr Greymore Woxoff
Lead Pilot . . . . . : LCdr Tom Doubtful
Copilot, Aircraft Side Number 58 . . Lt Gethome Quigley
Pilot, Aircraft Side Number 59 . . . Lt Roger R. Roger
Pilot, Aircraft Side Number 64 . . . . . Lt Hy Flogen
Pilot, Aircraft Side Number 57 . . Lt Worry Wart Nevers
Pilot, Aircraft Side Number 63 . . . Lt Goodie Stay Clear

The characters in this play are real. Resemblance to some helicopter pilots you know is intended. Only the side numbers have been changed to keep from fingering actual SOBs (Souls on Board).

LCDR Greymore Woxoff

LCDR Tom Doubtful

LT Gethome Quigley

LT Worry Wart Nevers

Act I Scene I

The scene takes place in the ready room of an amphibious assault ship cunningly disguised as an aircraft carrier. The characters, in flight gear, are assembled for a weather briefing before their departure for home. The teletypes and weather map machines, normally noisy and operating at full speed, are strangely quiet. A large weather map, slightly used, is prominently displayed. A large low pressure area is shown centered over southeastern Pennsylvania, western Maryland and Delaware and western New Jersey. Two tentacles stretch out in different directions from the low. One stretches east and north and is colored blue. The other curves

LT Roger R. Roger

LT Hy Flogen

LT Goodie Stay Clear

south and slightly west and is multi-colored – it starts out red, then changes to brown and disappears somewhere in Cuba. (Lots of things disappear in Cuba these days.)

Aerologist: What ho! What manner of men are these? (Jokingly. At 0430?) Now, gents your flight home should be no worry! Pun intended, Lieutenant. Akron-Canton at 0100 was clear and 10. Harrisburg municipal reported 1000 overcast, 2 1/2 in drizzle. Navy Norfolk is missing. Miss Americaland was reporting 200 feet with a mile. (Scowling.) However, nothing more than 1500 scattered on your route. You may have headwinds averaging about 10 knots. Visibility will be good.

Lead Pilot: What's the freezing level? (Coldly.)

Aerologist: Shouldn't expect it to be any lower than 4000 feet. There's warm air overriding but I'll check it and let you know.

Lead Pilot: OK fellows, it'll be the usual fly away formation. I'll lead in 58; 59 and 64 join on me; 57 and 63 form another section to my port, but stay up.

Squawk box: Ready four, this is AirOps. Pilots man your planes.

Curtain goes down as general milling around takes place. Poopy suits are being zipped up and mae wests checked. One voice loudly complains about the lack of coffee. Another complains about having had too much.

Act I Scene II

The scene takes place on the flight deck. It is dark. The wind is howling. An unidentified voice comes over the radio circuit, "Hey, my airspeed indicator says 50 knots." None of the helicopters can spread their rotors with that much wind. Miraculously the wind drops. It really isn't a miracle – the ship just slows down. All aircraft spread their rotors and one by one begin to engage.

Lead Pilot: All aircraft report when ready. (Hopefully.)

Pri-Fly: All Oxcart flight report.

58: All set.

59: Be ready shortly. My ASE won't . . . OK, ready.

64: Roger, all in the green.

57: A-OK.

63: Ready to go.

58: Any report on the freezing level?

Pri-Fly: Negative. I have no information. Oxcart flight your winds are 45 port, 35 knots. Cleared for takeoff.

All five aircraft pick up into a hover and then slowly depart the ship. They join up, switch frequencies and one unidentified voice says, "Man look at that sunrise. Isn't it beautiful?"

58: The Cape vortac is 330 degrees, 28 miles. It's going to be a beautiful day.

Thirteen minutes later when the flight passes the station all hands smile as they take note of a 20 knot tailwind. Home in two hours. We'll sure beat the school bus today. Up ahead it's a mite dark but it's still early.

Act II Scene I

The scene is set in the cockpit of 58 about fifteen minutes after takeoff. The sun is now shining, but the view up ahead is still dark – in fact, darker if anything. The pilot in the right seat is sitting slightly forward, round shouldered. He's busy tuning in a commercial radio station. Any kind of music, even church music, is great after six weeks at sea. The copilot in the left seat is flying the helo.

58: All planes come right to 035, now. Acknowledge.

59: Right with you.

64: Gotcha.

57: 035.

63: Roger and be advised my blades are out of track. I'll be lucky to hold 90 knots.

58: Roger 63, you and 57 trail along but keep me posted on your progress.

Copilot (58): (On ICS) Looks pretty dark up there. (Somberly.)

Pilot (58): Doesn't look too good does it?

58: All planes descend to 1000 feet, now. Keep together.

59: Wilco.

64: Roger.

57: We're about three miles from you.

63: I'm holding 95 knots and the vibration isn't any worse.

At this time 58 enters some clouds.

59: Can't see you any longer, Tom.

64: I'll slide out a wee bit.

Pilot (58): (On ICS) Get on the gages, Quig, I've got the windshield anti-ice and pitot heat on.

Copilot (58): That damn stuff is building up.

Let's go lower.

58: Hold your heading. Steady on your heading everyone. I'm going to call Salisbury; switch to button six and descend to 500 feet, now.

59: Wilco.

64: Rog.

57: I just completed a 180 and it's much lighter here. I think I'll break out any minute.

63: OK. Come on back on course. I've turned right and I'm VFR.

Pilot (58): (On ICS) We really have a load of ice, Quig. Stay on those gages, buddy. I wonder where the bottom of this crud is?

The outside of the plane looks as if someone has covered it with a bucket of that "work skipper" best, white. There is ice on the sponsons and ice at least two inches thick on the center panel of the windshield; ice is everywhere. Freezing level 4000 feet, ha! The pilot thinks very bad thoughts about the contractor and the Navy for building and buying an "all weather" machine, in the megabuck range, which he can only fly in VFR, no-this, no-that conditions. His thoughts are rudely interrupted by the expected and very ominous sound of ice breaking off the aircraft and he watches with his heart in his mouth as pieces disappear overhead. Shortly there is a slight shudder and then a loud bang as the No. 2 engine torque splits to zero but stark terror is replaced by renewed breathing when the torque returns to normal.

Pilot (58): I think we're losing No. 2.

Copilot (58): Let's get the hell out of here. How 'bout a 180?

64: I'm having torque fluctuations. I'm climbing.

58: Roger 64. 59, turn to 270. What's your altitude?

59: We're at 500 feet and we have a little engine problem. (You untruthful scoundrel! What do you mean a little engine problem? How come your voice is three octaves higher than normal?)

Copilot (58): Let's drop on down to 300 feet and see if we can't break out. This stuff can't go all the way to the deck.

Another piece of ice breaks loose. Bang! Both pilots hold their breath. No. 1 torque splits this time.

Pilot (58): (On ICS) We just lost No. 1.

58: Our No. 1 engine just quit. We're at 300 feet. Is anyone in the clear? 59, do a 180.

59: Wilco.

57: We're in the clear.

64: We're at 10,000 on top.

58: Mayday. My No. 2 is on fire. We're going to try to land in some farmer's field. 57, send out a Mayday for me. (Heatedly.)

Lots of radio calls ensue. Opposite radials are first given for 58's position but are then corrected. 58 lands OK and listens to the rest of the flight.

57: How are you doing, 59?

59: We're heading 180 right now. Both engines have split a time or two but they're still running. Hey, we just broke out. (Gratefully.)

59 breaks out at 200 feet right over the beach and suddenly the world is OK again, but holy mackerel! Look at all the ice – at least three inches on the center panel.

59: We're landing in a field just south of Waterloo. No emergency but I want to get rid of this ice.

59 lands in a field. No further problems. The clouds part and the sun breaks through. Inside the cockpit silent thanks are given that tragedy has been averted for the second time.

57: You want me to hang around 58 and 59?

58: Negative. Pass the word I'll be coming along in a little while. Is 59 OK?

59: Affirmative. We'll clear off the ice and follow you soon.

57: Roger you two. 58, 59 is OK. He's about 15 miles north of you. Sayonara. See you sinners in church.

Act III Final Scene

The scene is set in the squadron ready room. It is typically decorated with pictures of ships, subs, fixed wing planes (shades of things to come), helicopters and

safety slogans. The whole room is tastefully done in delicate two-tone green. The inevitable coffee bar guards the sink and proudly displays many gaily colored silent china sentinels. The flight leader and copilot are holding court with the less fortunate who rode the boat in. The copilot is still decidedly pale and his "soup strainer," neatly trimmed, accentuates his pallor. They relate the whole tale with just a wee bit more coating than they had ice on their helo. The audience is spellbound for they have just returned to the ready room from the hangar deck after having seen the engines of the iced-up helicopters. The sight was sobering and as one they wondered what had kept the engines running.

1st Seeker of knowledge: Say, Tom, when you guys started to ice up why didn't you make a 180 and descend in the clear?

Tom: We would have, except you just don't turn five aircraft around in the goo real quickly.

2nd Seeker of knowledge: Did you try to get an IFR clearance? How did 64 get on top?

Question ignored.

1st Seeker of knowledge: Did you shut down when you landed to clear off the ice?

Tom: If I had known what those pieces of ice were doing to the engines I would have. Poor headwork on my part but . . .

2nd Seeker of knowledge: Why did you guys get sucked into IFR conditions?

Copilot: It happened so fast we were in it before we knew it. We expected only scattered clouds at 1500 feet and when we descended to 1000 feet we expected to break out shortly. When we descended to 500 feet we just knew we'd pop out quickly. After that . . . And remember that clown told us the freezing level would be way up. We just had to keep on plowing once we got sucked in until we could make sure no one would have a midair. Remember we three in front were ahead of 57 and 64. We didn't want to tangle with them by doing a 180. By the time we got squared away we were in trouble and so was 59.

3rd Seeker of knowledge: NATOPS has inadvertent IFR procedures in it.

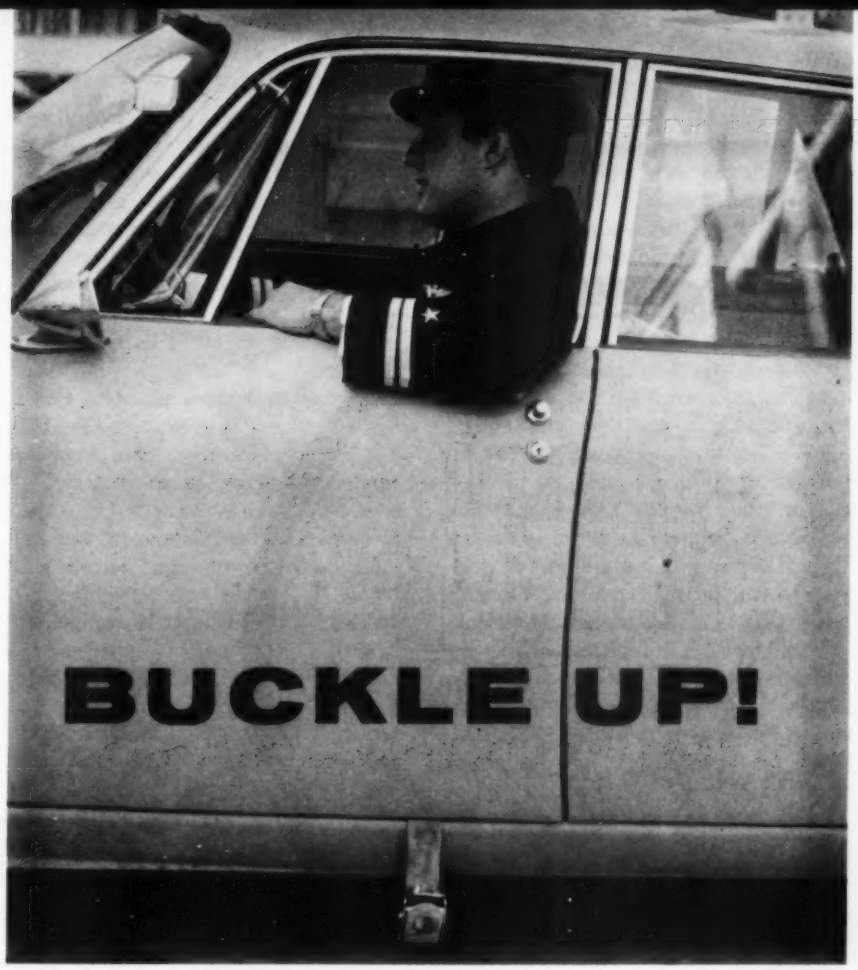
Heavy Silence.

Tom: You have to be practical and do things you don't want to do sometimes. Grandpaw Pettibone says the first maneuver he ever invented was a 180 out of a cloud. But, with five planes in the clag . . . Ice is better than a midair any day.

1st Seeker of knowledge: Well, I don't know. I'll bet it'll be a long time before anybody in this outfit goes IFR on a VFR flight plan again.

Voice of C.O. on the ready room squawk box. "You better Hong Kong bereave it! Now, knock it off and get to work." ◄

B.C. **by Johnny Hart**



SAFETY has become an integral part of our daily existence in modern aviation. Each and every day we study and advocate the use of NATOPS procedures, survival equipment, good judgment, etc., etc.

It seems odd indeed, in the light of such a safety conscious atmosphere, that the safety attitude we have developed toward aviation often does not carry over into our personal lives. You would no more climb into the cockpit of an aircraft without attaching your parachute and flotation gear and then fastening your safety harness than you would dive from a 100 foot tower into a wet sponge. Why then persist in driving an automobile without fastening your seat belts? Trite it is, but also true, that more lives have been lost on our nation's highways than in all of our wars. Five hundred and thirteen Navy personnel were killed in automobile accidents in calendar year 1968 alone. Their chances of survival would have been tremendously increased if seat belts had been properly used.

So use your head, which also means use the safety equipment in your automobile before operating in the "combat zone" of traffic. Be aware of the increased traffic flow and accident potential over the coming holiday season and, for safety's sake, in your car as in your aircraft, always, ALWAYS BUCKLE UP.

Eliminating the Wife Error

By Jackie Starmer

EVERY Navy wife knows that keeping her everlovin' happy and content is her primary duty in life, and . . . that any additional duties thrust upon her, such as bearer of babies, pumper of bicycle tires and dispenser of meals, medicines and money, are strictly her own puddle of mud and fer gawd sakes don't splatter Hisself with family problems, particularly before he hits the blue. And if this were fact instead of wishful fancy, all aviation safety officers could retire to Peru and raise wart hogs.

Since it has long been the contention of aviation safety officers that preoccupation with family problems oftentimes causes upset aviators to bend or even bust their birds, which in turn causes everyone from the Commander to the guard at the gate to get in a royal snit, it is obvious that something has to be done to eliminate the chain reaction resulting in "pilot error," or if you prefer the more honest term, "wife error."

And since it is impractical to abolish existing Navy marriages, and wives will innocently or otherwise continue to muddle up Hisself's mental state before, during and after missions, it is suggested that a mandatory indoctrination course be held for the wives of all flying personnel, briefing them on the hazards of hubby's home life, with particular stress placed on the importance of *Twelve Hours Twixt Fight and Flight.* Naturally, this course should be taught by a highly qualified instructor – someone with years of intimate knowledge and experience in creating these hazards . . . me, f'r instance.

Having been a veteran Navy bride for 17 years, I have been thoroughly orientated, indoctrinated, inoculated and regulated in all things military . . . I wear white gloves through receiving lines; I demand crew rest after birthings; I medicate my family with the standard Navy prescription of APCs and orange juice for every ailment from vertigo to obese ear lobes; I have never driven a *Follow-Me* jeep into a parked aircraft; and above all, I keep a calling card tray near the front door – where it seldom collects anything but cigarette butts, box lunch can openers and balls of rug fuzz. The important thing is, it's there.

It seems that in spite of this excellent Navy training and background, as a perfect wife, I ain't much. I found this out, thanks to the snide remarks of an aviation safety bohunk whom I shall bite in the neck at the first opportunity. Now, I'm actually aware that Hisself should go beanless before a mission, but how was I to know that rutabagas are lethal? There's not one word in the aviation safety manuals concerning rutabagas! It seems that rutabagas cause Hisself's gastric juices to over-gast something fierce, particularly when he's shooting landings, and the high cholesterol content riles up his fatty tissues to a fare-thee-well, also particularly when these two evil forces collide in or around the old gump's pituitary, well . . . all hell breaks loose. And because of this slipshod oversight by safety manual writers, one airplane is AOCP for a year, the runway is undergoing extensive repairs and a mangled S-2 tire now reposes in my living room as a plastic covered hassock.

Aside from being responsible for the home menu hazards, there's no doubt that we wives are held accountable for the daily problems of marital bliss that mayhaps miff an aviator to the point of being a potential wing-buster. Contrary to popular opinion, Hisself does not become a snarling beast only when his flaps won't flap, or his rudder won't rudd, or he wasn't promoted when he by-gawd shoulda' been . . . no, these routine problems don't put our "sky kings" into an accident-prone mental state.

Actually, it's the little things that cause Hisself to come unglued . . . which is why a wife should always check the flight schedule before she indulges in an indignant account of why she turned the hose on the commanding officer's wife this morning and just who does she think she is anyway! And say did I mention that Junior stuffed a prune up his nose and don'cha know that he won't get that scuba diving scholarship since no one can scube with a maimed nostril and that the bank should oughta hire bookkeepers who can add because we can't possibly be overdrawn *that* much.

And many a wife has been the cause of a feathered engine or, at the very least, a kinked relief tube, because of her unguarded reactions to Hisself's blue funks, which usually develop in every normal husband at two critical periods of the day – breakfast and dinner. Although the dinner hour at our house has all the serene atmosphere

of the Dempsey-Firpo fight ("git yer elbows off the table, don't eat so fast, clean yer plate, this kid will be eating with his fingers when he's thirty-five years old, git the cat off yer lap. . . "). I would say that of the two, the breakfast hour is the more critical period.

This is when, if we wives are to be instrumental in keeping the accident rate down, we must repress the overpowering urge to clout our roommates with their safety boots when the predawn conversation consists of, "and what cooking secret do you use to make these eggs taste like Ben Hur's old sandals" . . . and/or "my, my dear – you look about as sexy as a stopped-up sink in that flannel puptent." Husbandly remarks such as these are usually the signal to square off and have at it. But to insure a tranquil pre-mission mental state in your sky-jock, remember to say absolutely nothing. Indignant rage and revenge can be subtly expressed in other ways . . . possibly you can jam all the zippers on his flight suit or go retch on the seat of his Rover.

It goes without saying that family problems occurring during an extended cruise have caused more than one airplane driver to come nose to nose with an unexpected object – like a mountain.

This is a period in his life when he must be spared all worries other than, will he win at bingo tonight and how soon can he get an R & R to Waikiki.

Naturally, a long cruise is a bucket of worms to the wives left sitting on their hassocks and unless Hisself pacifies the little woman with more letters than a once-a-week note, (usually as romantic as the daily bulletin and as short as commissary hours), she will discard all efforts at morale building and manage to let him know that simply because he's three thousand miles away he needn't think that kids, mumps, fights and bills don't exist fer heaven sakes and a pox on your mental state and what about mine!

Although many a cruise widow is blessed with a husband who, though he reads fairly well, doesn't write, and has often wished that her roving roommate was as prompt and eloquent in writing love notes as he is in filing his per diem voucher, it is suggested that she refrain from penning any epistle to her absentee aviator that might possibly result in violent chain reactions. Since crippled aircraft beget Commanders' snits; snitted Commanders beget the nervous dizzies in pilots; the nervous dizzies is what begot Hisself into this cottonpickin' mess in the first place, and all on account of I wrote him the following letter:

Dear Pen Pal:

Will answer your note of three weeks ago before I get dressed for work. Oh, yes, I've taken a job to occupy my time while you're away . . . the pay isn't much but ZOWIE!! is it interesting! I'm a BOQ Housemother, 8 p.m. to midnight shift.

By the way, did I tell you that our dog is at the Vet's? No, he isn't sick; he's under quarantine. He bit that Shore Patrol Honcho – the same sorehead who gave me a speeding ticket and suspended my driver's license last week when I accidentally ran through a stop sign during the change of command in front of the Administration Building and plowed into a black car sporting a monogrammed flag the size of a bedsheet. No serious injuries, except to one fella . . . he looked sorta like the Admiral but it was hard to tell with all that dirt on him. Come to think of it, it just might've been. Oh well, whoever he is, he sure has a temper!

I won't bore you with the rest of the details – except to say that the damage to our car was slight. Four hundred dollars will fix it up as good as new . . . which reminds me, the last check I wrote seems to have bounced and I guess that's the reason your name was put on some kind of list.

In closing, let me reassure you that everything is under control here at home and no need for you to worry. Fly safe and keep in touch, pal.

Your ever-lovin' wife

P. S. . . . Whaddya know! It was the Admiral!

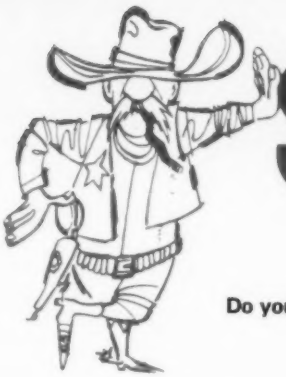
Like I say, something has to be done to eliminate the "wife errors" resulting in accidents. And it is the everlasting credit of one particular aviation safety officer that he tried to do his part in preserving the accident-free record of his outfit. However, because of his own devotion to duty in attempting to erase "wife errors," the poor bohunk was medically discharged with unusual injuries . . . neck bites.

Adapted from MATS Flyer

In the kingdom of the birds,

the parrot is the best talker and the worst flyer.

Orville Wright



Short Snorts

Do your duty in all things. You can not do more. You should never wish to do less.

Robert E. Lee

An Unusual Hoist

THE pilot of a UH-2C brought it to a hover over the deck of a DDG while on a personnel transfer hop. The rescue hoist was lowered to pick up a seaman for transfer to the carrier. After lifting the sailor aboard, the rescue hoist was lowered again to pick up parts of a condensate pump motor, also for transfer to the carrier for repair.

The largest part, which weighed about 160 pounds, was secured to the hoist cable by looping the hook and cable through the lifting rope attached to the component and clipping the rescue hook to the lifting cable above the hook assembly. The crew of the DDG was unable to thread the lifting rope into the rescue cable hook. As the component was being brought into the cabin the cable parted and the component fell back to the deck of the ship.

'Maddening, isn't it?'

The helicopter aircrewman, not being one to give up easily, rethreaded the cable on the fixed hoist boom pulley and lifted the remaining parts after installing an emergency hook by using the emergency cable splicer. When he completed the job he found he was unable to secure the hoist. After returning to the carrier about 30 ft of slack cable was found strewn around the transmission deck aft of the hoist motor. The aircrewman had incorrectly threaded the cable over, rather than under, the plastic spacer located above the hoist boom pulley. This allowed the cable to jump the pulley and become wedged between the pulley and its housing, thus allowing no further movement – up or down.

The reason that the cable originally parted was the result of incorrect attachment. When the component was attached by looping the cable around the lifting line and clipping the hook on the cable an excessively sharp bend in the cable resulted.

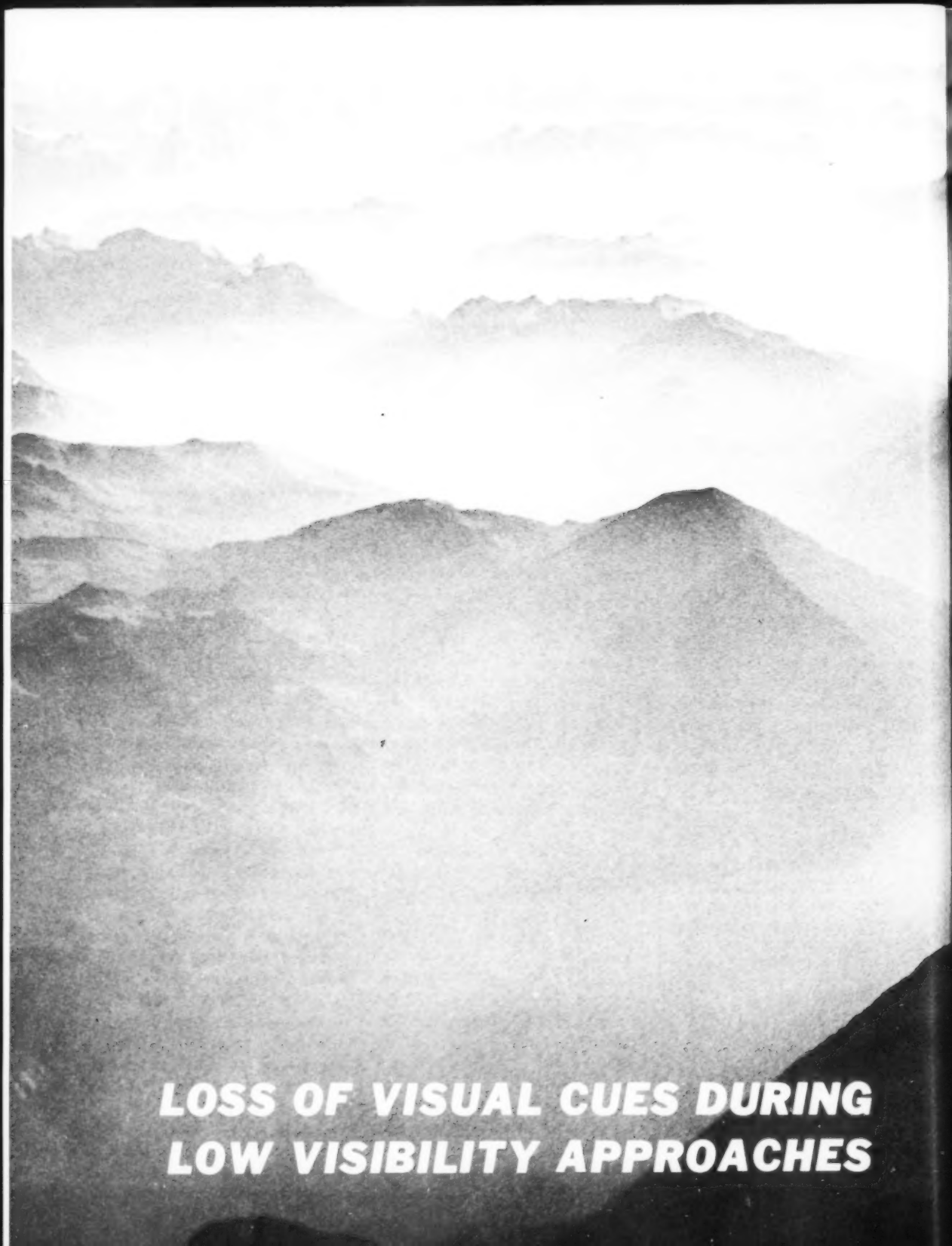
Helicopter crews must assume that nonaviation ship personnel have minimal knowledge of the correct way to use rescue hoists. If communications with the ship are nonexistent and if there is no loud hailer available the pilot must consider abandoning the operation or sending an aircrewman to the deck to do the job correctly.

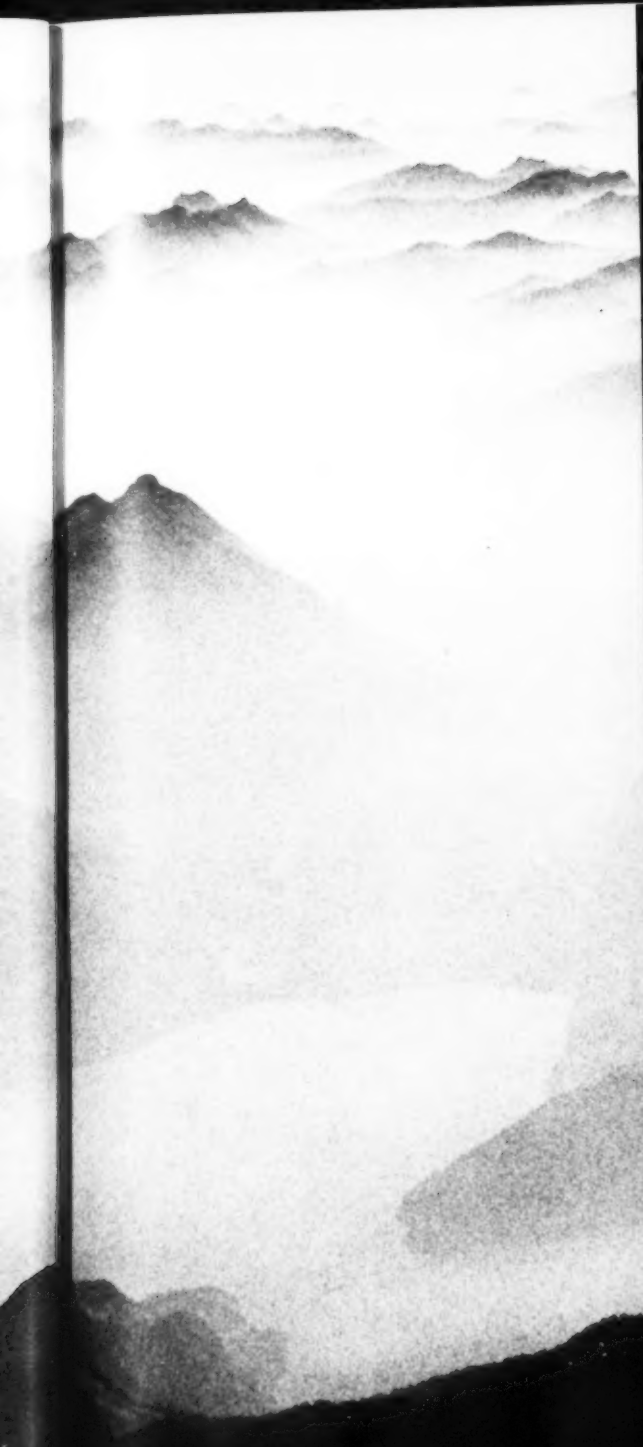
The fact that this mission was completed successfully was due more to luck than anything else. Someone on the DDG could have been killed or seriously injured when the component fell back to the deck. Equally as serious, the crew could have lost the helicopter if the excess cable had become entangled in the helicopter control azimuth assembly.

Mid-Air

THE pilot of an SH-3A had almost reached NAS Homeplate when he was involved in *TWO* mid-air type incidents within seconds. He was cruising at 300 feet about three miles south of the field headed for the regular traffic pattern entry point. He saw a seaplane at the same altitude going in the opposite direction, just in time. The helicopter pilot took immediate evasive action and missed the seaplane. As he turned toward the field he *collided with a model plane.* The helicopter was not damaged but after landing and removing pieces of balsa wood from the landing gear strut assembly one suspects that the model plane did not survive.

Along with supersaturated air traffic conditions at many locations there is apparently an additional hazard from model planes. Kites too?


LOSS OF VISUAL CUES DURING
LOW VISIBILITY APPROACHES



THE FAA has recently issued Advisory Circular No. 91-25, calling attention to the importance of pilots maintaining visual cues during the final stages of instrument approaches when reaching the DH (decision height) and MDA (minimum descent altitude) and then continuing the descent.

DH, with respect to the operation of an aircraft, means the height at which a decision must be made, during an ILS or PAR instrument approach, to either continue the approach or execute a missed approach. MDA means the lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glideslope is provided. Aircraft are not authorized descent below MDA until the runway environment is clearly visible to the pilot and the aircraft is in position to execute a safe landing.

During the past year there were several civil aircraft accidents that involved striking the ground short of the runway during instrument approaches. In one case it was determined that the pilot continued the descent after entering a thin layer of fog, lost sight of the runway lights and struck the runway threshold causing extensive damage to the aircraft. There are also several fatal accidents presently under investigation which appear to have occurred under similar conditions.

The National Transportation Safety Board released a report on 25 Sep 1969 concerning a passenger airliner which crashed while on final approach to an airport (in 1968). Thirty-five of the 37 persons aboard were fatally injured when the turboprop aircraft struck a steep hillside 250 feet short of the airport after descending through a layer of fog. The Safety Board determined that the probable cause of the accident was:

> "... an unrecognized loss of altitude orientation during the final portion of an approach into shallow dense fog. The disorientation was caused by a rapid reduction in the ground guidance segment (segment of approach lights visible) available to the pilot at a point beyond which a go-around could not be successfully effected."

The Board said its investigation showed that the flight was operationally routine until the final phase of the approach. The pilot was making an ILS approach and was aware that the glideslope of the ILS was inoperative because of technical problems with the automatic ILS monitoring system.

An early morning ground fog at the airport had severely restricted visibility in the approach zone for the

runway in use, the Board said, but in the 15 minutes just before the accident visibility from the tower had increased from one-half mile to one mile and visibility along the runway had increased from zero to one and one-half miles. The Board estimated that at the time of the crash, a 150-foot-thick layer of dense fog remained over the runway threshold and roughly the last half of the 2800-foot approach light system.

The Board concluded that some six seconds before the impact the aircraft began "a rapid descent" which took it below the field elevation, into the tops of trees and down to the initial point of impact. The plane caught fire, bounced back into the air, over the hilltop at the edge of the airport and onto the field beside the approach end of the runway.

Because the investigation developed no indication of any inflight failure, malfunction or other abnormality that would have caused or contributed to the accident, the Board said, "the only logical conclusion . . . is that some phenomenon associated with the reduced visibility upon entering the fog affected the pilot in such a manner that he steepened the descent to the point where recovery could not be effected." The Board said evidence showed an attempted pullup 2.2 seconds before impact – too late to avoid the crash.

The Board's report of its study concerning the shallow fog condition noted that the flight probably was operated in visual conditions during most of its approach. But as the aircraft descended into the low-lying fog, the segment of approach lights visible to the pilot "decreased rapidly, reducing from 220 feet to 37 feet in 1.6 seconds," the Board estimated.

"Also, it has been shown that the sudden reduction in visual range on entering the fog may be misinterpreted by a pilot as meaning the nose of the aircraft is rising," the Board added. "Pilots unfamiliar with this phenomenon will, therefore, tend to steepen their angle of descent when they encounter this situation."

The Safety Board made six recommendations to the FAA on the basis of its investigation of this and other accidents involving similar final approach problem:

- Amend sections 91.117 and 121.649 of Federal Aviation Regulations to prohibit any approach below 200 feet above field level unless the pilot has the runway threshold in sight and require that he continue to maintain visual contact during the remainder of the approach.
- Include as mandatory items in airline training programs and FAA-approved instrument flight school curriculums, information on shallow fog penetration, the effect upon the guidance segment and the potential illusions that can be created.
- Pursue as expeditiously as possible its research into instrumentation which would provide slant visual range information.
- Set standards and specifications and encourage the development of "realistic" low-visibility-approach flight simulators.
- Program improved approach zone lighting covering at least the last 1000 feet of the approach for installation on a priority basis, when and if financial conditions permit, at airports prone to frequent heavy fog.

Commenting further on the first recommendation, the Safety Board said that as the Federal Aviation Regulations now are written, a pilot may legally descend into shallow fog even though the accident (discussed above) shows that continuation of the descent into shallow fog with even marginal ground guidance can be deceptive and hazardous. "Therefore, from a safety standpoint, the deficiencies in the regulations are apparent," the Board concluded, because in the shallow fog situation the pilot can legally place his aircraft in a position where a recovery may not be safely accomplished.

FAA Advisory Circular 91-25 notes that pilots conducting instrument approaches utilize visual cues as they become available during the approach. At the DH or MDA the pilot should, however, be aware that due to shallow fog, snow flurries or heavy precipitation, these cues may be lost. If this occurs after DH or MDA, the pilot should execute the appropriate missed approach procedure as required by section 91.117(b) of Federal Aviation Regulations. Missed approaches, when properly executed, involve little loss of altitude below that at which the missed approach is initiated.

We are now well into the time of year where bad or rapidly changing weather is a common occurrence. Be prepared to cope with the situations described above and don't be fooled by the loss of visual cues. – Ed. ◄

The Five 's of Safety Talks

WHEN you deliver a safety talk, do you get yawns or action? If it's action, then your talks are producing the results they should. But, if your safety messages aren't getting through, there are steps you can take to improve them. Here are five ways – let's call them the 5 P's of giving safety talks, in which you can make sure you are driving home the principles of good safety habits.

Prepare

Even if you feel you know safety forward and backward, don't wait until you're standing in front of your audience before you start thinking about what to say. What comes out will probably be rambling and disorganized. In preparing safety talks, there's plenty you can do in the course of your daily activities. For example, you can write down ideas, quotes, notes on safety incidents and other observations you make during your work day. Carry a small notebook and you will soon build up a bank of reference material that you can draw on when you're preparing a safety talk.

Read all safety literature with your talks in mind. Whether it's a release from a safety organization or an article from a newspaper, trade journal or popular magazine, ask yourself, "What's in here that I can use?" If there is anything, jot it down or clip out the entire article and file it. With a different folder for each category of safety, you can easily locate source material on the particular subject you want to talk about.

Get the know-how of others on safety. Others may have good ideas you can use in your safety talks. Listening to others talk about safety will often tip you off to the gaps in your knowledge that need filling.

Pinpoint

Since you will usually have to keep your safety talk short, don't try to cover too much ground. It's more effective to concentrate on one limited subject and deal with that comprehensively. For example, you might discuss a specific safety rule, analyze a recent accident, or talk about fire prevention.

Personalize

A lot of dry, technical talk about safety won't leave much of a dent in your listeners' minds. An effective safety talk has to be personal.

Presentation

Try to make it as easy as possible for your listeners to absorb your safety message – plan your seating arrangement so that all those present can both see and hear you clearly. There should be good ventilation in the room and it should be free from distracting noise.

The more graphically you present your talk, the more likely it is to be remembered. Once you have picked your subject, consider the visual aids you might use to drive home the points you wish to make. Demonstrations, movies, slides, displays and charts can all contribute to the impact of your talk. Take the time to prepare your props so that there will be no interest-killing delays. If charts are used, they should be clear and easy to read, displayed as near to the audience as possible and removed as soon as they have served their purpose.

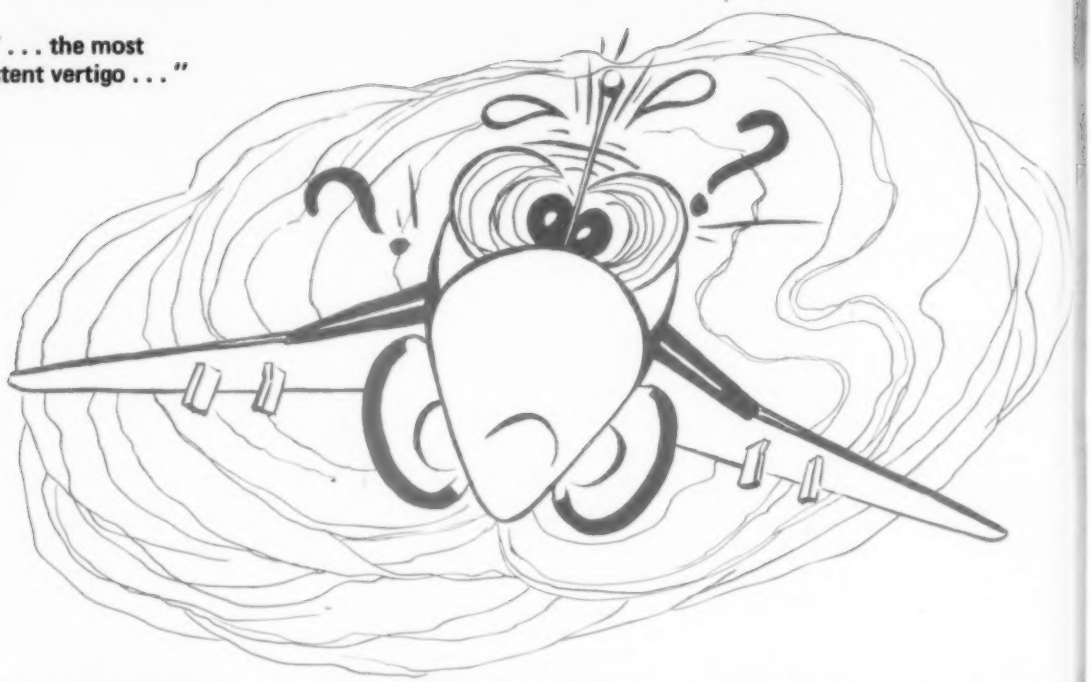
Prescribe

Your purpose in giving a safety talk is not just to inform – it is also to get action. Let your audience know exactly what safety goal you are aiming for, and how they can contribute to its accomplishment. If possible, set a specific safety target and devise a method of graphically showing progress toward it.

Good safety talks don't just happen. They must be well presented and if you work at them by preparing, pinpointing, personalizing, presenting and prescribing, they will work for you.

Rohm & Haas Co.
Supervisors Safety Bulletin
National Safety Council Safety Newsletter
July 1969

"... the most persistent vertigo ..."



MY BN and I were on a round robin instrument training flight in an A-6A. The last leg of the flight was flown at 16,000 feet over a low undercast (tops at 5000 feet). While still some 50 miles from homeplate the Center cleared us for an enroute descent. At this time the aircraft heading was 180 degrees. After commencing the descent (still in visual meterological conditions) we were told by the Center to come right to 160 degrees, a 340-degree descending turn. I replied, "Understand *right* to 160 degrees." The Center confirmed the right turn. I assumed that this was for traffic spacing.

We were handed off to Approach Control and reported heading 160 degrees, passing 8000 feet for 2500 feet. Approach Control instructed us to come *left* to 180 degrees – another 340 degree descending turn. I again replied, "Understand *left* to 180," emphasizing the word *left*. Approach Control confirmed the left turn.

Passing 5000 feet, while in the left turn, we entered the overcast. We leveled at 2500 feet and rolled out heading 180 degrees. From this point until we broke out at minimums, I experienced the most persistent vertigo that I have had in my short career (less than 700 hours). My senses told me that we were in a 30-degree left wing down attitude and all my concentration on the instruments couldn't cure it. I commenced the GCA sweating profusely and found myself consistently drifting off course to the right, often as much as 10 degrees. The GCA controller kept reminding me of my heading but my scan kept breaking down. Eventually we broke out at minimums and landed uneventfully.

Since fuel was not a factor and since the cloud tops were only at 5000 feet, I was in a very real sense pressing myself needlessly. I could have broken it off at any time, requested a climb to on-top and started all over again, probably without any vertigo. I have no doubt that the two descending 340-degree turns over an overcast induced the vertigo. Whether they were, in fact, needed for traffic spacing I don't know.

I think that if I had told the BN that I had vertigo he would have made himself more useful in

ANYMOUSE

The purpose of Anymouse (anonymous) Reports is to help prevent or overcome dangerous situations. They are submitted by Naval and Marine Corps aviation personnel who have had hazardous or unsafe aviation experiences. As the name indicates these reports need not be signed. Self-mailing forms for writing Anymouse Reports are available in readyrooms and line shacks. All reports are considered for appropriate action.

— REPORT AN INCIDENT, PREVENT AN ACCIDENT —

keeping my scan up. As it was he noticed the heading drifts but didn't mention them because he "figured that I knew what I was doing." We both learned a good lesson.

Vertigo Mouse

Vertigo has been identified or implicated as the cause factor in many accidents over the years so there's no doubt that it can present a serious problem (refer to the article, "Vertigo and Anxiety," on page 12 of the February 1968 issue of APPROACH).

We agree that there are some good lessons to be learned from this incident. Not the least of these is that the pilot and BN should be working as a mutually supporting team throughout the flight. In this case, when the BN noted the heading consistently drifting, he could have provided valuable assistance in helping the pilot keep up a good scan.

It is true that you could have discontinued the approach and climbed to visual meterological conditions on top but that would not be an available solution in many cases where vertigo is encountered. It is the pilot's prerogative as to whether an approach shall be continued or aborted, but if fuel or other considerations dictate continuing the approach, concentrate on your instruments and believe them. It is obvious that in cases of vertigo, a high degree of instrument proficiency will be invaluable.

As food for thought, should you experience vertigo again during an approach, consider the possibility of advising air traffic control of your problem. A simple statement like the following should do the trick: "Experiencing vertigo, request straight and level flight," or "Request no unnecessary turns," etc. You would undoubtedly receive the maximum in assistance and cooperation from the controller; however, both the pilot and the controller should be alert to insure that any deviation in the approach will not create a hazard by reducing safe terrain clearance.

As to the reason for being given turns the long way around, we have to assume that they were given by the controllers for aircraft separation/spacing purposes although you should have been told if such was the case. A short transmission questioning the direction of turn in a case like this would certainly be in order.

Control Problems

WHILE flying the lead aircraft of a two plane section of CH-46D helicopters on a night MedEvac mission I was called out on what should have been a routine pickup in the flatlands. The escorting gunships had established radio contact with the ground unit and the zone brief and other necessary information were received without delay. The landing zone was positively marked with smoke and the wind direction was also established.

I commenced a fairly standard tactical approach utilizing between 35-40 degrees angle of bank with an airspeed of 75-80 knots. Nearing the 180 and about 1000 feet AGL I began to pull in power to keep my rotor turns within limits and began slowing my rate of descent. At this time I felt that the collective pitch lever was binding badly. My first reaction was to glance at the boost pressure but it was normal in both systems. Subsequent trouble-shooting indicated that the collective pitch lever was binding on my copilot's armored seat. While glancing throughout the cockpit I inadvertently allowed the nose to fall through. The addition of power in a nose-down spiraling attitude resulted in an increasingly tight spiral that demanded immediate recovery. I pulled up the nose to check my rate of descent while simultaneously adding rudder to stop the spiral. Somewhere during the gyrations the bullet bouncer in the lower bubble shifted and restricted the normal play in the rudders. The aircraft momentarily went out of control at a dangerously low altitude – only about 400 feet AGL – as I fought to regain control of the rudders and stop the flat spin I was established in. I was able to recover safely and after climbing to altitude and checking all controls was able to complete the mission.

This experience could have been fatal for myself and my crew. I suggest that all CH-46 pilots ensure adequate clearance between the collective and the armored seat on preflight as well as establishing some means of ensuring that the protective armor in the lower bubble will not shift causing the rudder to bind. Most of all, remember to fly the aircraft first.

Rescue Mouse

Wow! This pilot had more control problems at a critical time in his approach than the law allows. Hats off to his knowledge of his plane and to his skill in being able to save the plane and the crew. This again points out the need for a good, thorough preflight – by the numbers. That armor is designed to protect you flight crews in Vietnam. Make sure that's all it does. We concur with the pilot, first of all, FLY THE AIRCRAFT!


'TWAS THE DA
BEFO
Twas the day bef Christ
In the land of elves
And thousands of toys
Sat shining on their shel
Over at Santa's
Things were still,
Ol' Santa still dra ing
Of orders he'd ll.
CLAUS'S
ACTION
NATOPS IS THE BERRIES
NATOPS LAFFS

DAY
FORE CHRISTMAS

day bef Christmas
and of elves
sands c ys
ning on ir shelves.

nta's
were a ll,
till dr ing
rs he'd ll.

When out in the workshop
There arose such a clatter
Santa leaped to the door –
What could be the matter?

There with his papers,
Books and such stuff,
Stood the old NATOPS Elf
Sounding quite gruff.

Santa knew well
What had been uncovered –
(He'd been scared all along
Of being discovered!)

"Santa," 'Twas said
In voice loud and clear,
"All of your quals
"Expired way last year.

"We can't let you go
"On your rounds Christmas Eve
"Unless you can pull
"Some new quals from your sleeve."

"I can't!" Santa cried,
"Oh what can I do?
"I knew all along
"My actions I'd rue."

"Let's see," said the elf,
(His brow in a knit)
"I also have noticed
"Your 'G' suit won't fit.

"I'll just have to give you
"Each one of the tests,
"Checkouts and lectures,
"We'll do our best.

"First to the chamber
"Of pressure we'll go,
"Check you out on new goodies,
"You'll be fixed up just so.

"Next we shall journey
"To the seat of ejection,
"Your sleigh has a new one,
"At safety's suggestion.

"Night vision is next
"We know you'll agree
"Since you fly just one night
"You'll need help to see.

"Then when that's over
"We'll go to your sleigh
"For the flight check of NATOPS
"Must be completed today.

"Next to the pool
"We'll take a short stroll.
"There you must swim for us
"(Great Scott, is it cold!)"

Needless to say
Through the checks Santa went
With a great deal of trouble.
(He was just about spent!)

And Santa discovered
While resting a bit
After all that activity
His 'G' suit would fit.

He thought to himself
As he checked out his sleigh,
He'd never again
Let *his* quals get away.

He was really quite tired,
One day's not enough
To bring all those quals
Back up to snuff.

Santa shouted to all
As he flew out of sight,
"I'll tell you one thing
"On this Christmas night

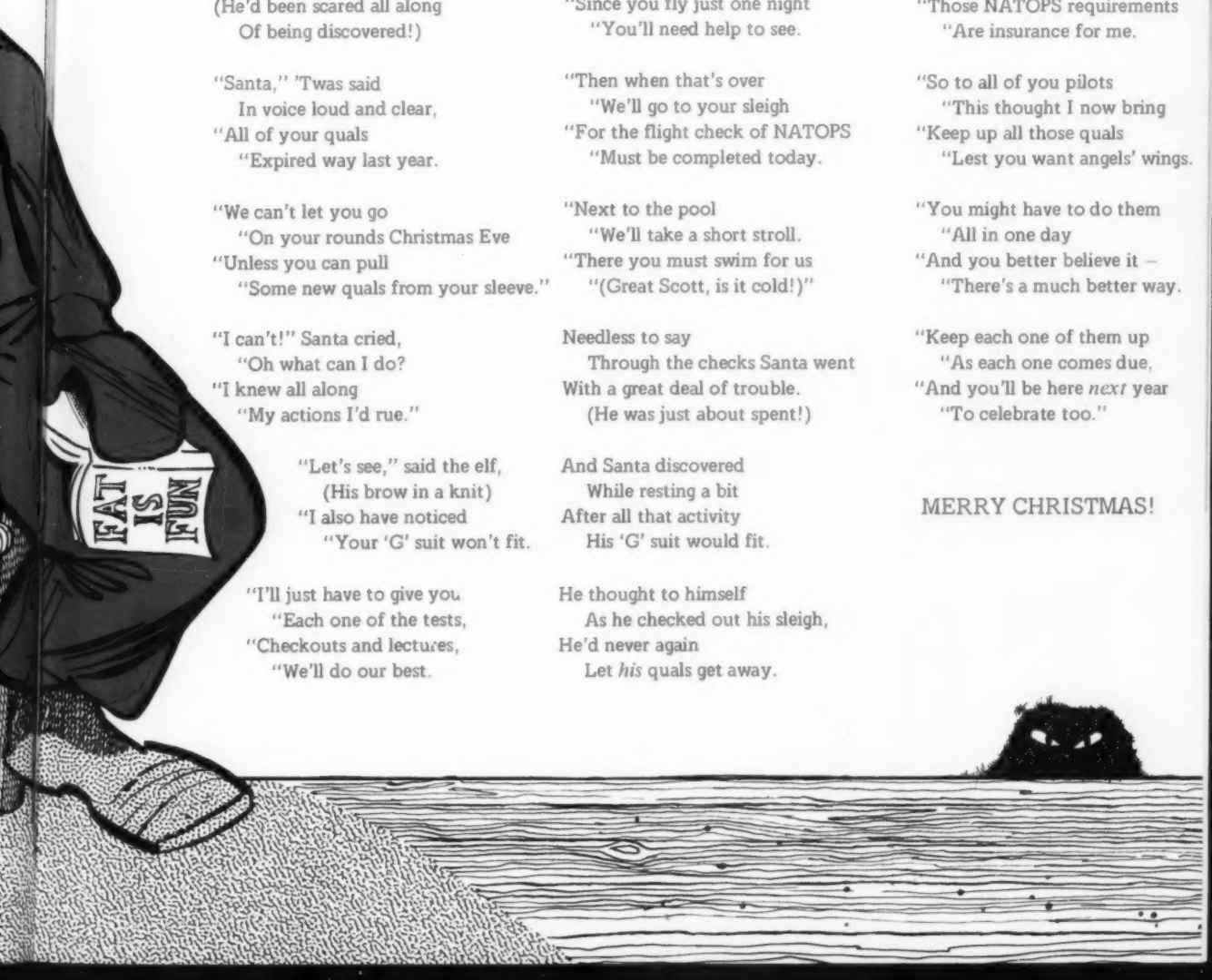
"Although they're a pain
"I really agree
"Those NATOPS requirements
"Are insurance for me.

"So to all of you pilots
"This thought I now bring
"Keep up all those quals
"Lest you want angels' wings.

"You might have to do them
"All in one day
"And you better believe it –
"There's a much better way.

"Keep each one of them up
"As each one comes due,
"And you'll be here *next* year
"To celebrate too."

MERRY CHRISTMAS!



A TALE FOR TENDER

EARS

SOME people have tough ears and some people have tender ears, which means that loud noise is more harmful to some folks than others. The trouble is that nobody but a hearing specialist can tell the difference. And when it comes to finding environments where people are subjected to noise – sheer rackety din and deafening roar – the world of naval aviation is hard to beat.

Constant loud noise can and does cause hearing damage and the tragic thing about it is that it can be extensive before you even become aware that anything is

happening. One day you realize that you are missing life's sweet soft murmurs and all of a sudden you know there must be something wrong. So for all practical purposes and for the sake of your hearing *you'd better play it as though you have tender ears!*

What's to be done?

Hearing protection is an individual's best defense against noise. A good rule to remember is that, generally, if it's so noisy you have trouble hearing a spoken voice (not a shout) at a distance of one foot, hearing protection is in order.

Keeping in mind that in addition to causing hearing damage, noise can contribute to fatigue, irritability and a generally uptight feeling, read on.

What Is Sound?

First, a bit of background . . .

What is sound?

To put it simply, when air is compressed and expanded rapidly, sound waves are generated. The energy from the sound waves is transmitted to the outer ear and on to the inner ear and is further transmitted by nerve impulses to the brain. Damage to the inner ear is the cause of a permanent hearing loss.

Sound has two characteristics: frequency and intensity. Frequency is measured by the number of vibrations or cps (cycles per second) or Hz (Hertz). The frequency range most important to speech is 300 to 3000 cps. Tones with slow frequencies are low pitch, such as the moan of a foghorn. Tones with rapid frequencies are high pitch, such as the chirp of a cricket. Hearing loss usually occurs first in the higher pitch tones above 4000 cps. This is the reason that hearing damage may be in the advanced stage before you realize it. Intensity is indicated by the spl (sound pressure level) in db (decibels). The decibel is to sound what the degree is to temperature. As the sound pressure level increases, loudness increases. The current Navy hearing conservation program (BuMedInst 6260.6A) states that when the noise sound pressure level reaches 85 db in any or all of the following frequency bands: 300-600, 600-1200, 1200-2400 and 2400-4800 cps, a hearing conservation program is recommended. When noise sound pressure levels reach 95 db, the program should be mandatory.

Two General Categories

Noise problems in naval aviation fall into two general categories: the noise experienced by pilots and crew in flight and the noise experienced by ground personnel around aircraft with engines running. Let's briefly consider inflight noise before tackling the subject of the horrendous noise which accompanies a great many of our ground operations. Let's begin with helicopters.

Helicopters are extremely noisy in flight because of their design. Many of the gear boxes in today's helicopters are mounted directly over the cabin spaces and the engines are mounted immediately adjacent to or directly overhead the pilot and crew stations. In addition, some models have intense exhaust noise. Recently the Army awarded contracts to several manufacturers for design of a "quiet helicopter." Techniques under study to reduce the noise level are: slowing the main and/or tail rotors; modifying the tips of the rotor blades to cut down the vortex noise; and the use of baffling and other insulation in the construction of helicopter fuselages.

The SPH-3B sound protective helmet which incorporates sonic earcups is being worn by helicopter pilots and crews and greatly improves noise attenuation in flight.

Reciprocating Engines

Noise levels in propeller-driven aircraft range from as low as 90 db to as high as 130 db, depending on both the type of aircraft and the condition of operation. All recips are loudest during preflight checks, takeoff and climb. When engine power is reduced at altitude the noise level drops. Noise levels in multi-engine aircraft vary considerably with crew position.

Turboprops

Contending for the reputation of being the noisiest aircraft in flight in the entire Navy inventory are the E-2 and the C-2, in which the turboprop noise resonates through the aircraft hull. The crews' situation has vastly improved with the introduction of the sonic earcup.

Ironically, during the first months of the introduction of the new sonic earcups to the fleet, failure of some squadron loft personnel to install a small rubber grommet (PN 67A1809-2, Stock No. RM-5325-814-0430-LXIX) canceled out the sound-attenuating qualities of the earcups. Items in *Crossfeed* and the *Weekly Summary* have spread the word on this and by now the problem should be non-existent.

Jet Aircraft

The cockpits of jet aircraft are by far the quietest of all. Granted there are noises generated by intake ducts, air conditioning turbines and engines, but the db level is considerably lower than in other types of aircraft. The A-7 *Corsair II*, one of the Navy's newer jet aircraft, does develop a cockpit noise level that is higher than desirable. However, a program for redesign of the inflight refueling probe (which vibrates and creates considerable racket) has helped alleviate this problem. In addition, pilots wear special sound-attenuating hard hats which further reduce effects of noise in the cockpit.

Continued

Permissible Noise Levels

Permissible noise levels in aircraft are established by a Tri-Service MilSpec: MilSpec A-8806A of 11 July 66, *Acoustical Noise Level in Aircraft, General Specification for.* This specification covers the general requirements for the control of acoustical noise in occupied spaces of aircraft, including the acceptable noise levels and the testing requirements for determining conformance to these levels.

Cockpits are noisy and present problems for pilots but the consensus is that ground and flight deck personnel such as maintenance men, plane directors, plane handlers and catapult crews with their daily exposure to intense noise levels have the worst of it by far. These are the people who in their own best interest *must be* educated concerning hearing damage and *must be* motivated to wear protective devices.

On the flight line, aircraft operations, full power turnups and jet test cells are noise producers of the first order. APU's (Auxiliary Power Units) and other power driven tools and vehicles add to the din. All of these operations can combine to produce ambient noise levels of more than 100 db for many hours every day.

The noise spectrum of the modern jet engine, the most harmful noise-generative source on the ground, includes the entire human hearing range. Men performing routine maintenance of jet aircraft are exposed to 140 to 150 db. Launching crews experience 140 db or higher during operations. Men anywhere else on the flight deck may be exposed to 130 to 140 db and stations abreast of the catapults will be swept by 140 db when aircraft are launched.[1] (In June 1969, the Bureau of Medicine and Surgery conducted the first noise survey of a CVA-type carrier during flight operations in more than 10 years. Findings from this study will be forthcoming.)

Temporary Threshold Shift

Hearing loss from noise effects may be temporary or permanent. With sufficient rest (non-exposure to high noise levels), hearing loss is due to a TTS (temporary threshold shift) and the damage is not permanent. However, when your job is in a continuously noisy environment there may not be enough time between noise exposures for you to fully recover. Hearing loss then accumulates (usually undetected) from day to day and month to month. Unless you wear ear protection in these environments or change jobs, your hearing loss can become permanent.

The ideal way to control noise in ground work areas is engineering reduction of noise at its source. Various approaches are:

- Attenuate noise by engineering design of the machine.
- Where possible, substitute a less noisy operation for a noisy one (for example, welding instead of riveting).
- Isolate the noisy operation in a remote area.
- Use sound-absorbent material on overheads, bulkheads and decks.
- Mount machines on resilient bases.
- Enclose the noise source.
- Use mufflers on jet aircraft where practical.

Unfortunately, engineering in noise abatement has not kept pace with technological advances that have increased noise in present day tools, machinery, power plants and engines. Therefore, the individual approach must be considered and utilized.

Individual Approach

From your standpoint as an individual, the most important thing you can do to protect your hearing is to wear properly fitted sound-attenuating devices. These are of three general types:

- Ear plugs (least effective).
- Cushion or doughnut earmuffs such as Mickey Mouse ears.
- Sound-attenuating helmets (most effective).

When a masking high-level noise is present your ability to hear and understand the spoken word is usually improved if you wear ear protection. A word of caution – when wearing sound attenuators you must exercise extra care to avoid hazards such as propellers, jet intakes and exhausts and rolling stock which are normally detected by their sounds. Heads up and look for hazards.

Finally, if you have reason to suspect you may be sustaining hearing loss, check with your medical department . . . don't wait until it's too late. ◄

[1] "Medical Aspects of High Intensity Noise and Ear Protection," (MN9318C).

Rock and Roll

Many of us gaffers with upwards of a quarter of a century of duty on this globe have for some time suspected that rock and roll music was hard on the old ears. Now, apparently, we have some scientific backing for our theory. Recent reports in the press state that the music in discotheques has been measured to levels as high as 138 db. According to other reports, guinea pigs exposed to 90 hours of 120 db rock music were actually deafened. One reporter (probably a crewcut 26-year-old) wonders, with tongue in cheek, if all this tribal noise is why long hair has become so fashionable. Next best thing to earmuffs?

TYPICAL SOUND LEVELS

AT A GIVEN DISTANCE FROM NOISE SOURCE	DECIBELS	ENVIRONMENTAL
	140	
50 HP SIREN (100′)		
	130	
JET TAKEOFF (200′)		
	120	
*RIVETING MACHINE	110	CASTING SHAKEOUT AREA IN A FOUNDRY
*CUT-OFF SAW		
*PNEUMATIC PEEN HAMMER	100	ELECTRIC FURNACE AREA
*TEXTILE WEAVING PLANT		
SUBWAY TRAIN (20′)	90	BOILER ROOM
PNEUMATIC DRILL (50′)		PRINTING PRESS PLANT
	80	TABULATING ROOM
FREIGHT TRAIN (100′)		INSIDE SPORT CAR (50 MPH)
VACUUM CLEANER (10′)	70	
SPEECH (1′)		NEAR FREEWAY (AUTO TRAFFIC)
	60	LARGE STORE
LARGE TRANSFORMER (200′)		ACCOUNTING OFFICE
	50	PRIVATE BUSINESS OFFICE
		LIGHT TRAFFIC (100′)
	40	AVERAGE RESIDENCE
SOFT WHISPER (5′)		MIN LEVELS - RESIDENTIAL AREAS IN CHICAGO AT NIGHT
	30	STUDIO (SPEECH)
	20	STUDIO FOR SOUND PICTURES
	10	
THRESHOLD OF HEARING YOUTHS - 1000 - 4000 C/S	0	

Typical sound levels measured with a sound-level meter. Sound-level measurements give only part of the information usually necessary to handle noise problems and are often supplemented by analysis of the noise spectra.

— Handbook of Noise Measurement, (6th Edition), Peterson and Gross, General Radio Co., 1967. (With permission)

*OPERATOR'S POSITION

The Holiday Season is upon us so make doubly sure you don't contract

GET·HOME·ITIS

SOME accident investigators have called it destination fixation. Others use the term get-home-itis.

Maybe you promised Mama that you'd make the year's Big Holiday Party. Or your son is getting his Star Scout award or your first grader is one of Santa's elves in the Friday afternoon Christmas play. Or perhaps you're just plain fed up with an extended RON and the weather is closed in from Dallas to D.C. Whatever the situation, as the hands of the clock advance and your impatience increases, the voice of reason becomes weaker. Before long you've convinced yourself you can hack it, no sweat, and while operations and ground crews speculate on your chances, away you go into the graying blue yonder, perhaps to your first accident or possibly *to your last.*

In the past few years the Navy has experienced a number of accidents involving get-home-itis. Here, in summary, are three. As is often the case, weather was a factor in the first two and, significantly, both occurred during the winter months. In the third accident a pilot in a flyoff after a seven-month WestPac deployment ran out of fuel and had to eject just off the coast.

In the first accident the instructor chase pilot of a three-plane flight of T-28's gambled with the weather on a day navigation syllabus hop and lost. He and his students had already decided to RON at their refueling stop, because of IFR conditions, when the weather improved to VFR conditions. According to the available forecast, which was five to six hours old, weather at Home Base was marginal but VFR. Since the flight would not arrive until shortly after sunset, the forecaster cautioned the pilot on the possibility of low ceilings, a fog bank and deteriorating visibility. (There was some speculation later that the pilot, due to time zone changes, did not have a clear idea of sunset time at Home Base. Squadron SOP calls for landing students prior to official sunset.) As an extra note of caution, the forecaster suggested that the flight contact an enroute

weather station for a more up-to-date report.

The three T-28s took off on a VFR flight plan. The flight proceeded normally until, approaching a cloud layer, the instructor directed a cruise descent from 4500 feet to 1500 feet. During the descent, the flight passed over the leading edge of the cloud layer. The flight was then directed by the instructor to make a descending right-hand 360 degree turn and return to its original heading. When the bottom of the cloud layer proved to be lower than had been anticipated, the lead student descended below the previously assigned altitude to remain VFR.

The flight continued descending to approximately 300 feet indicated altitude where the student wingman broke formation and began to climb. (The instructor deviated from NATOPS procedures by permitting his flight to descend below 500 feet AGL under marginal VFR conditions.) Shortly thereafter the lead student also started to climb. Both students regained VFR conditions on top at 2000 to 2500 feet and contacted each other by radio. Attempts to contact the instructor were unsuccessful. The wreckage of his aircraft was discovered 24 hours later.

Investigators found that the instructor had told a

number of people ("everyone he had been in contact with") that he wanted very much to get home. The fact that the weather forecast for Home Base was IFR for the following two days no doubt intensified his feelings.

"Although LTJG X had previously expressed interest in safety . . . and was considered a well-qualified flight instructor," the investigating board wrote, "his decisions on the day of the mishap were strongly influenced by his desire to get home."

The squadron commanding officer had some thoughtful words in his endorsement to the board's report: "The lessons to be 'learned' from this accident have been learned and relearned at great expense scores of times in the past. The first, which has been reiterated time and again is that meticulous care and a great amount of thought and hard-earned experience have gone into the establishment of procedures found in NATOPS and squadron Standard Operating Procedures. To deviate or attempt to shortcut any of them is to court disaster. Second, while no pilot is completely immune to a lapse of judgment induced by the thoughts of getting home as scheduled, the danger can usually be avoided through generous applications of common sense, sound judgment and objective analysis of the situation."

An A-4 pilot's haste to get home in the face of adverse weather to complete some work requirements of an immediate nature was the precipitating factor in our second accident. Meteorology clearly defined adverse crosswinds (40 to 90 degrees from runway heading with a velocity of 20 knots gusting to 30). The pilot had his aircraft fueled for the short (40 minutes) flight home and took off with the flaps up. The aircraft departed the runway prior to becoming airborne, crashed and burst into flames as the pilot ejected. His streaming parachute was damaged by the fireball and did not fully deploy.

Commenting on this fatality, one endorser addressed the question of why an experienced jet pilot with close to 2000 hours of jet time including more than 1300 hours in model, a professionally competent, conscientious and mature aviator, would have attempted such a takeoff. This must be attributed, the endorser wrote, to "over-confidence, hasty planning and get-home-itis."

The two accidents just reviewed took place in 1968. For a different manifestation of the get-home-itis syndrome, let's go back a few years and take a look at the flyoff accident mentioned earlier.

At the end of a seven-month WestPac deployment, a pilot launched in an F-8C from the carrier as part of a 12-plane flyoff to NAS West Coast. During the catapult stroke, his main generator failed and he was unable to retract the landing gear. He deployed the ram air turbine and advised pri-fly of his difficulty. He headed for the pre-planned bingo field, at an altitude of 10,000 feet and a speed of 220 knots. The aircraft was in a configuration of gear down, wing down, cruise droop down, ram air turbine deployed and speed brakes trailing. Fuel flow indicated 3700 pounds per hour. Ground speed was estimated at 240 knots.

As the flight continued, our pilot's fuel state became critical and a heading was taken direct to an Air Force base considerably closer than the bingo field. At 100 miles out, he had only 15 minutes of fuel remaining and at 50 miles out, only two minutes. To make an embarrassing story short, he flamed out and ejected. Chagrined but uninjured, he journeyed the rest of the way home by rescue helicopter.

Of considerable interest to all concerned was the fact that in the preflight briefing, the pilot had copied the distance to the bingo field as 380 instead of 450 miles. Three hundred and eighty miles was, in fact, the distance to the Air Force base. We won't go into the ensuing discussion of distances, fuel computations, head winds and configurations here. Suffice it to say that the board was of the opinion that the primary cause of the accident was the pilot's decision to proceed to a shore station rather than land the aircraft back aboard ship.

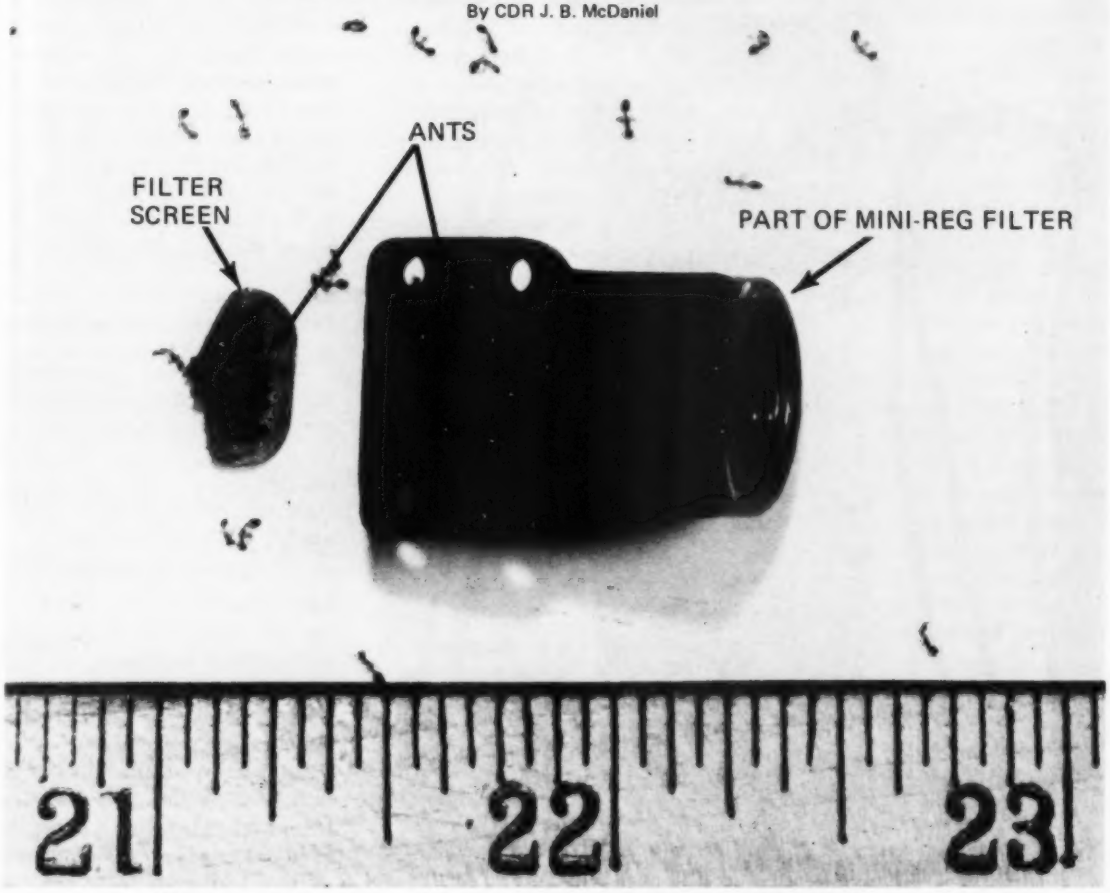
"The board feels," the report states, "that emotions attendant to flyoffs after extended deployment influenced the pilot's actions and judgment." The board recommended reemphasis to all pilots of the dangers inherent in the "I can get there" attitude associated with flyoffs.

There are other cases – some similar and some different – but the point has been made. Christmas and New Year's holidays are coming up and even if you're far from your real home, the tempo of social activities and the desire to be in on the action are very likely to increase. If you want to take Mama to Big Parties in the years ahead or see your boy get his Eagle Scout Award or your little first grader become a second grader, then slow down. Don't gamble your life for immediate rewards . . . there are better and better things to come.

Don't wish for safety; do something about it.
Anon.

The ants will get you if you don't watch out!

By CDR J. B. McDaniel

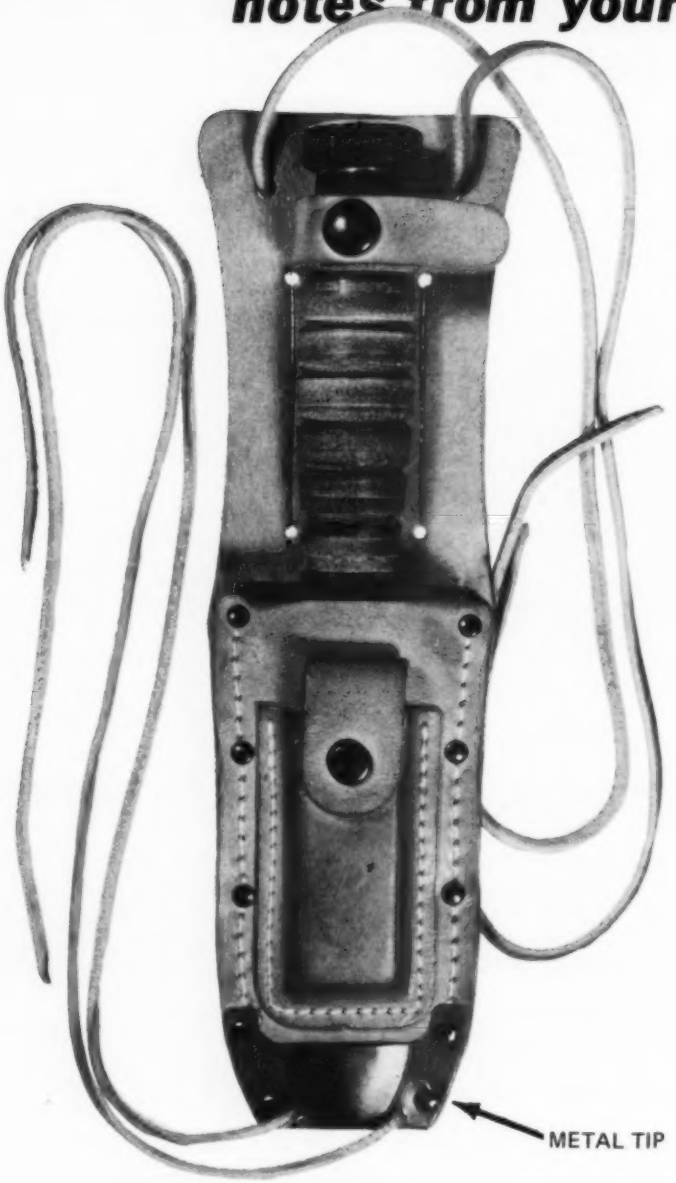


WHILE on TAD to a composite squadron Det in DaNang, my flight gear was stored in a locker inside the BOQ (2nd deck). Our operations shifted from pure jet to US-2C's for an extended period providing services to Yankee station ships and all of my jet flight equipment items were temporarily stowed. Then an undetected ant invasion (by the Viet Cong?) was launched.

Upon return to MidPac Base I created considerable ill will with the "Fruit & Bug People" of the Dept. of Agriculture by smuggling in the VC ants. Their hiding place (the Mini-reg filter) was not discovered until I attempted to launch in an A-4C. Turnup and preflight cockpit checks were "normal" until the mask console O_2 switch was activated. The sudden application of O_2 pressure compacted the VC ants that were present and walking around in the hose. As advertised, the Mini-reg filter did its job by stopping the "march" but alas, the now-compacted ants in turn "stopped" the flow of much needed oxygen. A new mask was substituted and the old one DIR'd with the above plot finally brought out into the light and sight of the vigilant Aviation Equipment Shop Personnel. (By-the-way, O_2 under pressure kills VC ants.)

Moral: The pilot who doesn't regularly check his mask for proper operation prior to its intended use may provide the ending to a much sadder tale than this!

notes from your flight surgeon



Knife Sheath

A MODIFICATION which may be showing up on the general survival knife in future procurements is the metal-tipped sheath. This addition can effectively reduce the potential hazard of a sharpened knife blade point penetrating the sheath end and injuring the owner. (Just such an injury was reported in a recent T-2A ejection. The pilot's knife went through its leather sheath and cut him in the chest.) At present no directives cover the metal tip modification to the sheath but it can be done locally with a minimum amount of effort.

Visor Down

DURING a UH-1E's normal rocket firing run, an unknown object separated from a rocket and struck the right door gunner on the helmet visor, cutting his nose, and then fell away from the aircraft. The crewman's helmet visor undoubtedly prevented more serious injury. Wear those visors *down!*

Dye Marker

THE on-scene commander reported that the survivor's dye marker was the first signal he saw. He was most impressed with the visibility of the dye which was easily sighted even in hazy, cloudy weather and in moderate seas.

Aviator's Equipment Officer

Troubles

AFTER ESCAPING from a ditched helicopter one of the crewmen pulled the lanyard on his PR-2 belt type packet liferaft to inflate it, became entangled and was unable to inflate the raft. In addition, he wore his Mk-2 life vest so tight that after inflation he could not extend his neck enough to keep his head out of the water. As a result he became dangerously fatigued before rescue.

The investigating flight surgeon recommended that instruction in the proper use of all survival gear be included as mandatory training lectures every six months for all pilots and crewmen regardless of experience level.

On the subject of PR-2 liferaft inflation, Clothing and Survival Equipment Bulletin 11 of 10 June 65 states: "*Operation: pull out raft retaining lanyard to expose inflation toggle. Pull*

toggle out and down to inflate raft. Expansion of raft during inflation will force open snap fasteners and hook and pile tape, freeing raft from container."

Night Ground Accident

IN AN attempt to indicate to the director in front of a TS-2A that he was going to fold the wings, an electrician (AE3) stood up in the cockpit and extended his left hand out the hatch and into the rotating prop arc. He lost the ends of his thumb and forefinger. Here's how events built up to this night ground accident.

The AE3, accompanied by three other qualified maintenance men as assistants, was to check the wingspread and flap cycle of the TS-2A. He started the engines, spread the wings and cycled the flaps twice without incident. At this point, confusion arose between the AE3 in the cockpit and the director outside and in front of the aircraft. The AE3 had completed his check and wanted to fold the wings. He indicated this by giving the wing fold signal with his hands inside the dimly lighted cockpit. However, the director outside signaled with lighted wands for the AE3 to cycle the flaps once more.

At this point, the electrician stood up in the cockpit with his shoulders and arms outside the left overhead hatch. Trying once more to communicate his intention to fold the wings, he inadvertently extended his left hand into the rotating prop arc, amputating the tips of his left index finger and left thumb.

"The cause of this ground accident and injury to this individual was due in part to a lack of communication between the individuals involved," the squadron report states. "They failed to discuss each man's responsibilities prior to going to the aircraft so as to alleviate the possibility of just such disastrous confusion as did arise. Secondly, a basic concept (and one that has been discussed repeatedly in the squadron) was violated when the individual arose and exposed himself to a spinning 11-foot propeller, in the darkness, without apparent awareness of the danger inherent in this movement."

In his endorsement to the report, the squadron commanding officer tagged complacency.

"This ground accident which could have cost a man his hand or arm is the result of the type of complacency which is hardest to combat," he wrote. "Well-qualified maintenance personnel, each familiar with the job he was to perform, did not work as a team. The lack of discussion and the misunderstanding which followed are direct results of complacency toward a routine maintenance test."

The squadron is stressing to all maintenance personnel the value of an adequate brief with specific details such as how close the propeller arc is to the cockpit hatches.

For an account of a similar occurrence in an S-2, please see "Unusual Prop Injury," p. 34, August 1968 APPROACH. – Ed.

Helmet Helps

AFTER a partial power failure a UH-46A landed in the water and taxied until it arrived next to an LSD. The engine was secured, the rotor blades struck the water and the helo rolled to the left, nose down. The crew escaped successfully.

As the copilot swam up to the surface, a rotor blade struck him on the head. Thanks to the protection afforded by his SPH3 helmet, he did not lose consciousness. He inflated his life jacket and five minutes later was picked up by motor whaleboat.

Shed Your Chute!

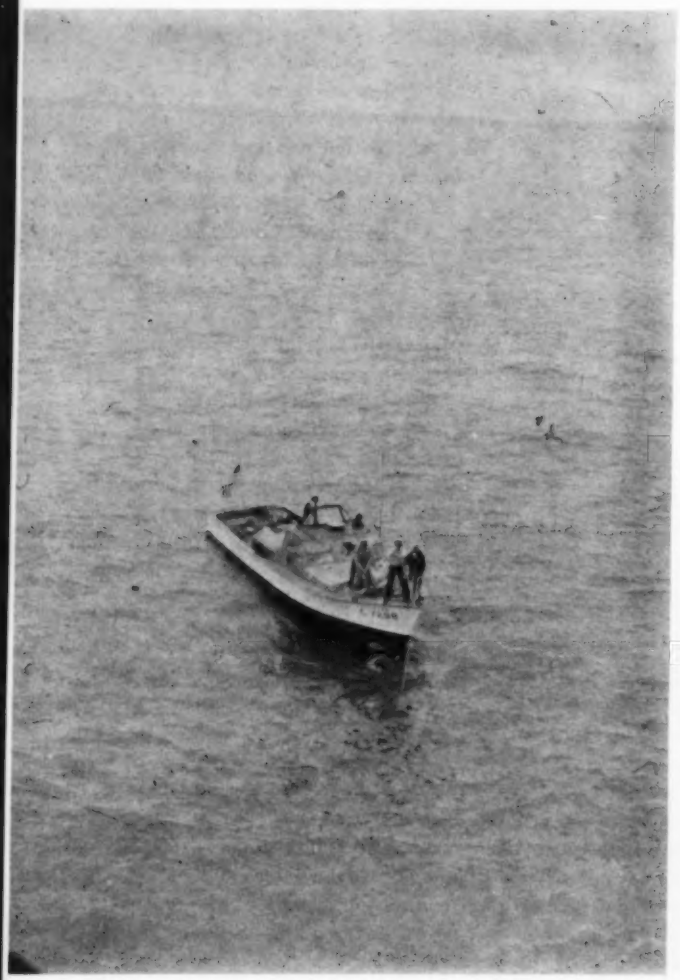
DURING an over-water ejection from a crippled F-4, the RIO allowed himself to concentrate too much on a possible leak in his life preserver at the expense of giving thought to getting rid of his parachute. Upon water entry he was erroneously convinced that his Mk-3C had a leak, decided to find his raft immediately and neglected to release his koch fittings. Just before he reached the raft in his seat pan, a large wave hit and forced him underwater. When he surfaced, he found himself to be entangled in his parachute shroud lines. He released his koch fittings at that time but was unable to free one leg from the shroud lines that were pulling him under. After a bit of a struggle, he was finally able to find the knife on his survival vest and cut himself clear of the shroud lines and raft.

The RIO's problems with his parachute again remind us of how deadly a water-filled parachute can be. A perfect ejection can be of little value if the crewmember is drowned by the same parachute that just saved his life. Flight crews must continually prepare themselves for ejection by knowing their procedures and courses of action. The pilot in this case knew exactly what he was going to do and the rescue went like clockwork. The RIO, on the other hand, seemed unsure of his course of action and procedures and the "air leak" tended to magnify his difficulties and divert his attention from the most important problem – a parachute in the water.

It must be reemphasized that it's imperative for flight crews to get away from their parachutes in the prescribed manner immediately upon entering the water. ◄

Open sea salvage has been the subject of two articles in APPROACH. An H-2 recovery article appeared in the Nov 1968 issue and H-3 salvage was the subject of an article appearing in the Dec 1968 issue.

H-34 Open Sea SALVAGE



AVR marks the spot.

PELEE ISLAND bears approximately 140 degrees, 29 miles from Naval Air Station Grosse Ile, Michigan in the western part of Lake Erie. Any pilot northwest bound out of Cleveland on airways V 26, V 42 or V 297 on a clear summer day must be quite impressed by its beauty. The island is about 3 miles wide by 6 miles long and is well known to all Grosse Ile pilots – especially the chopper pilots who practice sonar dips in its vicinity.

One day the crewmembers of an SH-34, out on a training flight, were confronted with an emergency and had to ditch about a mile off the island. They were promptly rescued. Weather conditions (high gusty winds and waves estimated at five feet) were too severe to permit immediate salvage operations but the submerged helicopter's position was marked by a 40 foot

Look it over carefully, Brother.

TUPELO arrives.

Bottoms up.

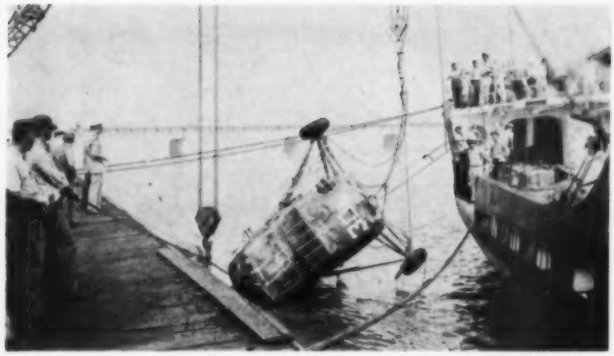
AVR (crash boat) out of NAS Grosse Ile the next day.

The helicopter sank in about 25 feet of water and a decision was made to use station personnel for the salvage. The helicopter lay inverted with the tail boom about five feet below the surface. Scuba divers, BM1 Joseph, BM3 Joseph (brothers) and LCDR Parks of NAS Grosse Ile made repeated dives to survey the situation. The rotor hub was buried in about two feet of sand and mud which negated efforts to roll the helicopter sufficiently to hook on a line. The Coast Guard was contacted and USCGC TUPELO (WLB-303) was dispatched from Toledo to assist. Since the divers reported that

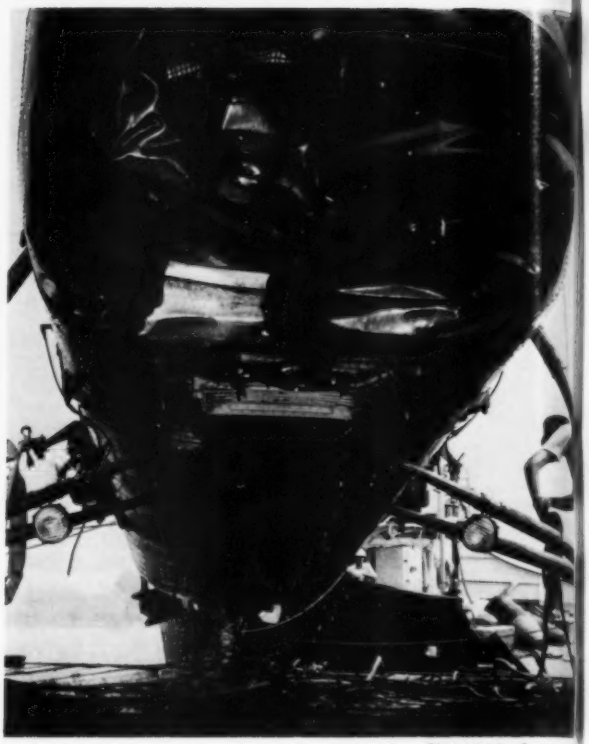
Easy does it.

Into the water.

Headed home.



Roll me over.



Not too bad.

Hoisting out.

Now set 'er down.

there was no way to attach a line to the rotor hub the aircraft was brought to the surface by a V-sling attached to the landing gear struts, hoisted aboard inverted and carefully lowered onto a make-shift cradle for the transit back to base.

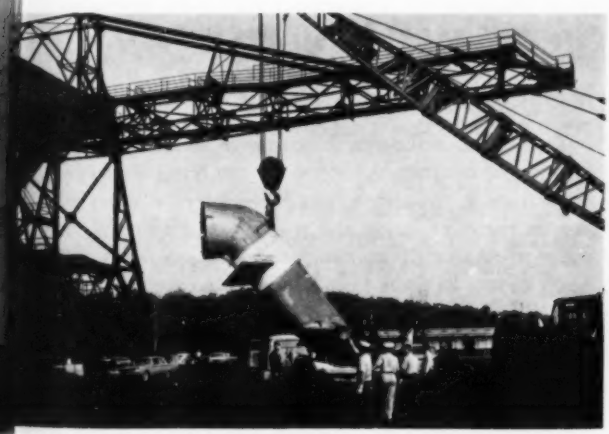
There were no facilities at the Grosse Ile boathouse to right the helicopter so arrangements were made with Detroit Edison Power Company to use their crane located on the coal loading pier.

TUPELO eased alongside the pier, about 50 feet off, and lifted the helicopter back over the side and into the water. Before the crew of TUPELO put the aircraft back into the water, a lifting ring was installed and lines from the dockside crane were hooked up. As TUPELO's lines, attached to the landing gear struts, were eased off the lines from the dockside crane, attached to the lifting ring, were taken up. In this manner the helicopter was rolled upright, lifted out of the water and lowered onto the dock on its own landing gear. Maintenance personnel hooked up a mule and towed the helicopter back to NAS Grosse Ile.

During the entire operation no salvage damage was incurred. Corrosion was not a serious problem since the helicopter had been submerged in fresh water. Maintenance personnel changed the engine, installed new main and tail rotor blades, repaired the skin in a few places and had the helicopter flying again in short order.

Crossing the bridge.

Right full rudder.



Dockside crane hooking up.

Request permission to come aboard.

IMPROVED AIRCRAFT CARRIER FIRE PROTECTION

By Robert L. Darwin
Fire Protection Engineer, Safety Division, CNM

DURING the past two and one-half years, two major fires have occurred on the flight decks of U.S. Navy aircraft carriers. These fires clearly demonstrated that the existing firefighting equipment needed significant improvement to handle mass conflagrations on flight decks.

Following the fires, the Navy was deluged with suggestions on how to solve the problem. Every one of the ideas was considered, even including a suggestion that the flight deck be tilted during a fire, so that everything could conveniently slide off into the sea! After months of soul-searching and a painstaking rejection of alternatives, the Naval Ship Systems Command and the Naval Ship Engineering Center focused their efforts on modifying NBC (nuclear, bacteriological and chemical) washdown systems so they could be used for firefighting. The NBC washdown system consists of an array of open nozzles designed to cover the entire exposed surface of a ship with a water spray to wash off nuclear, bacteriological or chemical contamination resulting from enemy action. All new carriers are equipped with permanently installed washdown systems. Since water alone would have little if any effect on a jet fuel fire, a decision was made to evaluate the effectiveness of the NBC system when modified so as to discharge a six percent solution of Light Water.

Light Water is the new noncorrosive, nontoxic liquid foaming concentrate developed by the Naval Research Laboratory in the early 1960s. When mixed with water in a six percent solution and aerated into a foam, Light Water smothers hydrocarbon fuel fires in seconds. Light Water derives its name from its ability to cause water to

float on hydrocarbon fuel. The resultant water seal not only smothers the fire but also prevents the escape of vapors. Numerous large-scale fire tests have shown that Light Water has a margin of superiority over conventional protein foam of approximately three to one in firefighting capability. In addition, Light Water has an indefinite shelf life and is compatible with Purple K powder, a dry chemical firefighting agent widely used throughout the Navy.

Prior to the *ENTERPRISE* fire Light Water was rapidly replacing protein foam as the standard agent in Navy shore-based aircraft crash and firefighting vehicles because of its superior effectiveness on fires involving common Navy aircraft fuels, specifically, JP-4, JP-5 and aviation gasoline.

The Navy quickly realized the advantages of providing Light Water aboard ship. However, the use of Light Water in fixed shipboard systems such as the NBC washdown system, necessitated proportioning with sea water since all ship fire distribution systems utilize sea water. The Light Water then in use by the Navy at shore facilities was mixed only with fresh water and was not compatible with sea water. Hence, the search was on for a sea water-compatible Light Water formula. After many months of coordinated research by the Naval Research Laboratory and the commercial supplier of Light Water, a sea water-compatible formula was developed in the fall of 1968.

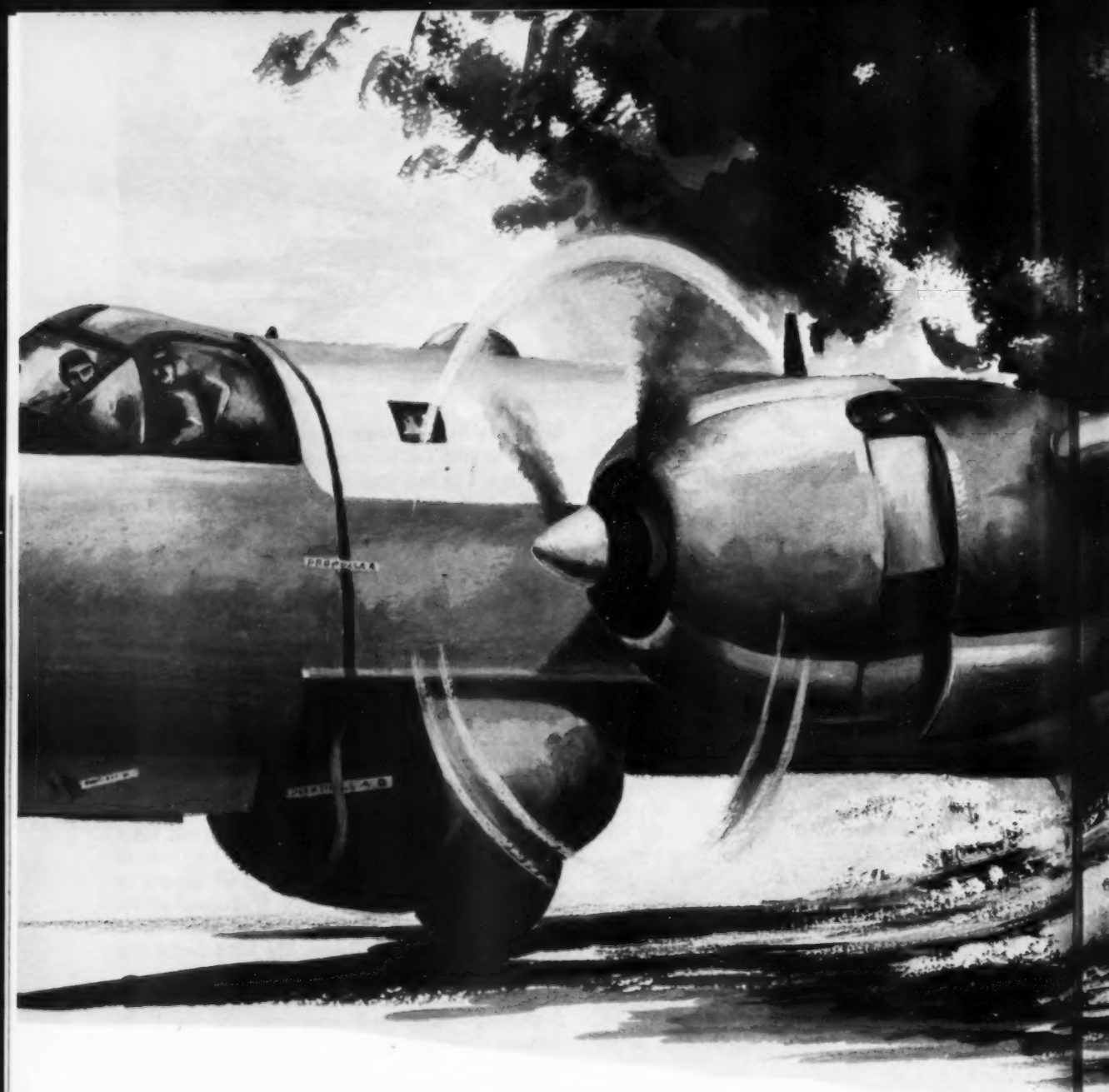
Large scale fire tests conducted at NAS Jacksonville indicated that the new sea water formulation was as effective as the older fresh-water type. The Jacksonville tests also confirmed the feasibility of utilizing the washdown system for firefighting purposes. Simulated flight deck fires of 10,000 square feet involving 3,500 gallons of JP-5 fuel were extinguished in less than two minutes in a 30 knot wind.

All attack aircraft carriers are now scheduled to receive fixed flight deck Light Water systems. *USS ROOSEVELT* (CVA-42) was the first ship to be so equipped. *USS AMERICA* (CVA-66) is now in overhaul at Norfolk, Va. She will sail later this year with a pushbutton, remote controlled flight deck firefighting system utilizing Light Water. The system will be able to cover the flight deck in a matter of a few seconds with a fire-extinguishing six percent solution of Light Water. In addition, all fog-foam hoselines will be converted from protein foam to Light Water as will overhead sprinklers on the hangar deck. Other carriers will be fitted with similar systems during future overhaul periods.

As an interim measure, all attack carriers are now equipped with TAUs (Twinned-Agent-Units) and MB-5 aircraft crash firefighting vehicles. The TAU vehicle carries 80 gallons of Light Water and 240 pounds of Purple K powder. The MB-5 truck is equipped with a roof-mounted turret that can deliver Light Water solution at a rate of 250 gpm. The MB-5 carries 430 gallons of Light Water solution.

Concurrent with the development of improved firefighting systems and equipment, the Naval Air Systems Command and the Naval Ordnance Systems Command are sponsoring research projects to determine means of making ordnance safe and especially to reduce the susceptibility of ordnance to thermal detonation. Hopefully, these and other concentrated efforts towards improved carrier fire protection will prevent recurrence of another *FORRESTAL/ENTERPRISE* holocaust. ◄

Safety Review



Good Show, Petty Officer Bolton!

THE enlisted man in naval aviation has always been a key person in the safety program. In this instance it was a qualified enlisted taxi pilot who saved an SP-2H. ADR3 Larry R. Bolton, of NAS Olathe was at the controls of the *Neptune* conducting runup checks on a newly installed R3350 port engine. At the same time a previous gripe concerning inadvertent fuel dumping from the port jet engine was also being checked out.

The crew aboard the SP-2H consisted of Bolton and two other flight crewmen. One of the crew was in the cockpit with Bolton and the other was in the after station acting as observer. The port jet was put into standby for about five minutes with no evidence of fuel dumping. Then it was started and the RPM stabilized at about 30 percent. Almost immediately the after station called over the ICS and reported that the port jet engine was on fire. Simultaneous with this report the port jet fire warning light illuminated. Bolton looked at the engine and saw a large quantity of fuel on the deck and flames all the way from the deck up and over the top of the wing. His reaction to this potentially disastrous situation was instantaneous. He released the brakes of the SP-2H and started taxiing away from the pool of fuel while the mech in the copilot's seat secured the fuel supply to the port jet with both normal and emergency switches. The engine fire continued even after the fuel supply was shut off so Bolton kept the *Neptune* rolling to prevent fuel from building up on the deck until fire trucks could arrive on the scene. As the fire trucks neared his position Bolton secured both recip engines and the crash crew promptly extinguished the fire.

Fire damage required replacement of the port jet engine and some repainting of the port reciprocating engine cowling. The source of the fuel leak was the jet pylon fuel filter drain valve. It is likely that the valve was not fully closed after the fuel filter had been reinstalled.

Object Lesson

The important factor in this ground accident was the fast thinking and the professional way in which the fire was handled. Bolton did an outstanding job in correctly analyzing the situation and taking immediate action; the mech in the copilot's seat correctly actuated the switches required to shut off the fuel supply to the port jet; and the crash crew was quick and effective in their response; the tower controller was on the alert, observed the fire and passed the word to the crash crew. Many articles have appeared in MECH and APPROACH concerning cockpit coordination, communications and aircrew training. This example of perfect teamwork bears out the fact that these men were well trained, knew their jobs, reacted quickly and correctly and undoubtedly saved an SP-2H. ◄

How Goes 1.0 in 70?

THIS report is being made to focus attention on how Naval and Marine Corps aviation did during the first quarter of this Fiscal Year as the goal of 1.0 in 70 is being pursued. The statistics presented in the figures below tell things as they are. They are not totally encouraging and there is room for considerable improvement on all fronts. A comparison is made between the first quarter this year and the first quarter last year.

Obviously, if an overall Navy/Marine Corps major accident rate of 1.0 per ten thousand flying hours is to be realized by the end of FY 70 *NOW* is the time for that second effort – TEMPUS FUGIT!

Command	First Quarter FY 70			First Quarter FY 69		
	Hours*	Accidents	Rate	Hours	Accidents	Rate
AirLant	166,236	32	1.92	186,332	28	1.50
AirPac	217,654	43	1.98	252,845	52	2.06
CNATra	318,479	21	.66	313,913	13	.41
CNABaTra	152,848	7	.46	158,620	3	.19
CNAVanTra	89,250	8	.90	89,305	7	.78
CNATechTra	9,110	0	0	8,298	0	0
CNAResTra	67,271	6	.89	57,690	3	.52
Other	16,458	1	.61	13,066	1	.77
Marines	192,117	31	1.61	195,361	27	1.38
Lant	48,198	7	1.45	42,940	1	.20
Pac	113,629	20	1.76	128,511	23	1.79
MARTCom	30,290	4	1.32	23,910	3	1.25
Totals	**910,944**	**128**	**1.41**	**961,517**	**121**	**1.26**

Fig. 1

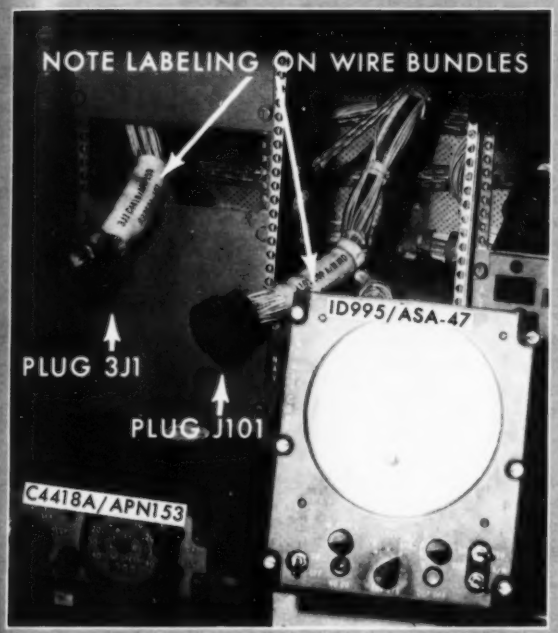
Class	First Quarter FY 70			First Quarter FY 69		
	Hours*	Accidents	Rate	Hours	Accidents	Rate
Fighters	85,049	26	3.06	88,334	30	3.40
Attack	166,687	44	2.64	170,300	45	2.64
Helicopters	136,614	28	2.05	155,426	19	1.22
Miscellaneous	42,987	5	1.16	34,460	8	2.32
Trainers	236,086	17	.72	240,122	14	.58
Transports	85,185	4	.47	94,253	3	.32
Patrol	78,271	2	.26	91,856	0	0
ASW	80,065	2	.25	86,766	2	.23
Totals	**910,944**	**128**	**1.41**	**961,517**	**121**	**1.26**

Fig. 2

*Hours for Sep 69 are estimated.

MURPHY'S LAW *

P-3A/B Electronics Murphy



General view showing location and arrangement of ID995/ASA-47, C4418A/APN-153 and associated plugs. Note labeling on wire bundles next to plugs.

Comparison of plugs J101 and 3J1 show that they are identical and can be plugged into the wrong piece of equipment if care is not used.

PLUG J101 of the ID995/ASA-47 Doppler Airmass System Indicator and plug 3J1 of the C4418A/APN-153 Ground Speed Drift-Angle Indicator were reversed upon installation of these two systems in the aircraft (see photos). That is, plug J101 was *incorrectly* connected to the C4418A/APN-153 and plug 3J1 was *incorrectly* connected to the ID995/ASA-47. This is possible because both of the plugs are identical – Bendix PN PTO 6CE-22-55S.

It is recommended that maintenance personnel pay careful attention to the labeling of the wire bundles during connection of these plugs.

Phantom Phlub

The F-4B Murphy in November APPROACH (Pg. 45) has the arrows and explanatory markings in the wrong positions. The picture labelled incorrect is in fact the *correct* rigging for the nose gear and vice versa. This proves that Murphy really exists! – Ed.

* If an aircraft part can be installed incorrectly, someone will install it that way!

LETTERS

Knitted Cuffs

FPO, San Francisco, California – In the August 1969 issue of *Hot Rod Magazine* the regular feature "Roundy-Round Corner" by Steve Allen was devoted to the use of nomex in racing drivers' protective suits. I felt one idea was particularly applicable to aviators' nomex flight suits. This was the use of knitted cuffs with elastic action for arm and leg openings vice the velcro tabs presently in use. Elastic knitted cuffs would prevent sleeves and legs from riding up and exposing more of the body in case of fire. The incorporation of such cuffs would also hinder and perhaps discourage the slitting of sleeves as is sometimes done.

J. F. Whitfield
CPL, USMC
H&MS-15, MAG-15

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• This is an excellent idea and has been forwarded to NADC (Naval Air Development Center) for evaluation.

More on Altimeter Corrections

Moffett Field, California – CNO msg 110006Z Jul 69 specified criteria for comparison of a reported station corrected altimeter setting and an actual altitude reference for determining an "acceptable" altimeter for flight operations. *(This criteria was discussed in the 6-12 Jul 69 issue of the Weekly Summary. – Ed.)* The acceptance criterion of ± 75 feet error is questionable as to conducting safe flight operations, as is the directive not to use the altimeter correction.

The acceptance of an altimeter with an error (non-applied correction) of up to ± 75 feet is considered unacceptable if corrections are not to be applied to subsequent reported altimeter settings. This represents carrying over an additional error during a critical phase of operation, i.e. an instrument approach to landing. This error is not as critical for a single-piloted aircraft because of the additional minimum requirements specified in OpNav 3710.7 series instructions. For a multi-piloted aircraft, however, where there are no additions to minimum descent altitudes, the situation becomes critical. TERPS (Terminal Instrument Procedures) are based on barometric pressure altimeter readings to determine MDA (minimum descent altitude) and DH (decision height). MDA and DH are determined by adding the landing ceiling minimum to the field elevation for an altitude reference for the pilot to continue the approach or execute a missed approach procedure if the runway environment is not in sight. On a precision approach (ILS or GCA) this represents a critical altitude where the margin of error must be a minimum value for a safe transition to a landing or a missed approach. In the low airspeed-low altitude range, static system errors are minimal, an inherent characteristic of sensitive pressure altimeters. When the altimeter is set to the landing field altimeter setting the error due to non-standard temperature diminishes on descent until, upon landing, the altimeter reads the field elevation. If the correction to the barometric scale is not applied, an induced error of up to ± 75 feet may be in evidence at touchdown.

In view of the above it is the opinion of this command that barometric corrections should be noted and applied to all reported altimeter settings including constant pressure altitude flight. This will assure maximum protection, within the limits of altimeter operation, during all phases of flight and will reduce confusion and uncertainties in interpreting TERPS.

J. H. Haywood
VP-31

• The old procedure of figuring an altimeter error correction was eliminated because it was technically incorrect and could possibly compound existing altimeter errors. Of the several inherent altimeter errors, the old altimeter correction procedure only attempted to correct scale error. Scale error is caused by the irregular expansion of altimeter aneroids and every altimeter has its own individual scale error. For example, in the case of the P-3A/B altimeter (MilSpec Mil-A-6863D-2), the acceptable scale error is ± 30 feet at sea level, ± 80 feet at 10,000 feet and ± 130 feet at 20,000 feet. Significantly, scale errors for any given altimeter may be plus at one altitude and minus at another. Therefore, one altimeter correction cannot be applied across the board for all altitudes/elevations. By applying the altimeter correction the pilot could be compounding the error that would exist at his destination if it is at a different elevation than that of his departure point.

The altimeter correction should not be applied even if the takeoff and landing are at the same airfield. The correction is only valid at a specific instant and location and does not recognize what the source of the discrepancy may be. Temperature effects, inaccurate altimeter settings and unrecognized field elevation variations are some other error causes. These errors may or may not be constant.

The acceptance criterion of ± 75 feet for an altimeter is a figure which is in use by the FAA and U. S. Air Force as well as the Navy. Pilots of multi-piloted aircraft, making a precision approach (ILS or PAR) will be assisted by either a GCA controller or by the ILS glide slope in maintaining safe terrain/obstacle clearance during the critical final approach phase. For a single-pilot aircraft and during non-precision approaches the error in the pressure altimeter may allow the aircraft to descend to an altitude below the approach minimum descent altitude which is equal to the altimeter error but the required minimums under these circumstances (higher than those for a precision approach) allow for this error.

APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request.

Address: APPROACH Editor, Naval Safety Center, NAS Norfolk, Va. 23511. Views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.

The new altimeter setting procedure has been adopted to prevent compounding any of the several altimeter errors. The acceptance criterion of ±75 feet error is a figure which has been deemed acceptable from both flight and maintenance standpoints. *However, this ±75 feet error is not a mandatory acceptance criterion.* It is the prerogative of C.O.s and pilots to establish rejection criteria lower than ±75 feet based on pilot capabilities, mission requirements and weather considerations. The ±75 feet does, however, establish the *maximum* allowable error that will be accepted.

. . . or, Why Don't They Get Off the Pilot's Back

Washington, D.C. – Your Oct 69 issue of APPROACH carried a Navy adaptation of an article of mine ("What's With the Flight Safety Program These Days?"). Leading into the article was a letter challenging the need for and advisibility of routing privileged aircraft accident reports through the chain of command. Because my article may not have been entirely responsive to that issue, I'd like to offer the following additional comment:

While accident analysis reports sometimes point embarrassing fingers, they also serve to focus attention – in the interest of accident prevention – on all of the extenuating circumstances which come to light during the course of the board's investigation. Bearing this in mind, if seniors in the chain of command were bypassed and, therefore, not privy to all of the facts, I suspect that too often invalid and unfavorable conclusions would be drawn among the intermediate staff echelons between the reporting command and the Safety Center. Thusly, in my view, reputations might suffer more in the long run from a protective, direct routing system than from the present system.

CDR R. J. Copin, USCG
Chief, Flight Safety Section
U.S. Coast Guard Headquarters

• Your additional comment, as well as the observations contained in your original article, are well stated. We believe that they provide individuals in naval aviation with a valuable insight into our system of flight safety reporting and safety education. In our view, they represent a substantial contribution to aviation safety.

MECH Available By Subscription

Beginning with the Summer '69 issue, MECH, the magazine for naval aircraft maintenance and support technicians will be available to the public through private subscription. Industry, publishers not on the Exchange List, Reservists and others having a need for personal copies may order the magazine from the Division of Public Documents, Government Printing Office, Washington, D.C. 20402.

Subscription rates: Single copy, 75 cents; 1-year (4 issues) $3.00.

New Use for Shroud Cutter

FPO, New York, N. Y. – The integrated torso harness now used in the E-2A could present a problem in a ditching situation. In order to separate his harness from his parachute and seat pan the crewmember must activate two koch and two rocket jet fittings. This is not always an easy task, even with two good hands.

Consequently, it is suggested that the hooked shroud cutter on the survival knife might be used, in an emergency situation, to cut through the harness. Should the fittings jam, the nylon straps of the harness could be severed with the shroud cutter. Experience has shown that by using a slight sawing or twisting motion to start the cut, the shroud cutter will cut through almost any thickness of nylon strap or webbing we use in our operations.

This may be old news to NavSafeCen but since most of us in the squadron were not aware of this possibility it is worth mentioning. It is also recommended that ASOs take a check of their personnel to ensure that all crewmembers have this cutter, know where to carry it and how to use it.

LCDR J. M. Fulcher
ASO
VAW-123

• We assume that you are referring to the shroud cutter of the pocket survival knife, FSN 9Q 51110-526-8740. Survival equipment specialists here at the Center point out that the hook blade (shroud cutter) is designed to cut shroud lines under tension and is too fragile to be *recommended* for use as a webbing cutter. However, they agree that the straight blade of the pocket survival knife could be used for this purpose as could the standard Navy-issue fixed blade survival knife.

Jamming and failure of rocket fittings is believed to be rare and there have been no cases of jammed koch releases reported to NavSafeCen. However, this is not to deny the possibility that it could occur. Therefore, your suggestion could possibly prove of great value to someone, sometime and should be considered as a back-up if other attempts for detaching parachutes and seat pans should fail.

Vol. 15 **approach** No. 6

RADM Roger W. Mehle

Commander, Naval Safety Center

Our product is safety, our process is education and our profit is measured in the preservation of lives and equipment and increased mission readiness.

Contents

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Next Month

CARRIER LANDINGS

Credits

Cover painting by R. G. Smith depicts the vigilance maintained by A-4Cs at the ready during this holiday season. Courtesy McDonnell-Douglas. **Pg 12** B.C. by Johnny Hart, Courtesy Johnny Hart and Field Enterprises. **Pg 26** Photo: Art Schoeni. Courtesy LTV. **Pg 31** Painting, 'January' by John Chumley, collection of the Norfolk Museum of Arts and Sciences, Norfolk, Va. **Pg 33** Photo: Courtesy the Author. **Pg 36-39** Photos: Courtesy NAS Grosse Ile.

The above letter "S" represents the style and maximum size which has been authorized for CNO Aviation Safety Award Winners.

is for SAFETY

OPNAV message 132154Z October 1969 authorizes an "S" for Safety to be displayed on aircraft assigned to squadrons which win the annual CNO Aviation Safety Award. The authorization extends through the fiscal year subsequent to the year the award is won. An appropriate hash mark has also been approved for repeat winners in consecutive years.

MIL (Spec)-I-18464F, Insignia and Markings for Naval Weapon Systems, sets forth, among other things, the rules for insignia and markings applied to the exterior surfaces of all Navy and Marine Corps aircraft. This specification requires that all letters and numerals be of the modified vertical block type, uniform in size and shape. They are to be either black or white, depending on the color of the background upon which they are applied, in order to provide maximum visibility and greatest contrast.

"S" for Safety letters, therefore, should conform with MIL (Spec)-I-18464F. Additionally, letters shall not be more than 6 inches high and placed under the squadron insignia (when used). The squadron insignia shall be displayed as noted in paragraph 6B of OpNavInst 5030.4, Naval Aviation Insignia which states:

"b. Insignia may be displayed upon aircraft forward of the cockpit and on or above the horizontal center line of the fuselage, and shall be a size compatible with the size of the aircraft. Such insignia shall not interfere with other required markings."


SAFETY
is no
Accident.